INDEX OF SUBJECTS.

ABSTRACTS, 1887.

And also to Transactions, 1887 (marked Trans.); and to such papers as appeared in Abstract of Proceedings but not in Transactions (marked Proc.).

A.

Abrin, 990. Absorption in the stomach of the horse, **74**3. Acenaphthene, 592. amido-, 592. — constitution of, 495. --- nitro-, 592, 964. Acetaldehyde, action of, on polyvalent phenols, 809. Acetaldoxime hypochlorite, 795. Acetalresorcinol, 40. Acetals, chloro-derivatives of, 28. Acetamide, action of hydroxylamine on, Acetamido-benzene-m-diazopiperidide, Acetanilide, action of phosphoric chloride on, 481. - orthazo-p-brom-, 251. Acetates, decomposition of, by water, - estimation of acetic acid in, by direct titration, 869. - ethereal, action of alcoholic and metallic alkyl oxides on, TRANS., Acetic acid and its derivatives, behaviour of, with phosphoric chloride, methane fermentation of,1135. separation of, from formic acid, 751. specific heat of the vapour of, 429. - synthetical, 796. - chloride, action of aluminium chloride on, 127. chlorination by means of, 932. β-Acetonaphthalide, dinitro-, 839.

Acetoacetic anilide and its bromo- and isonitroso-derivatives, 159. Acetoacrylic acid, 465. Acetobutyl alcohol, Trans., 718. - anhydride of, 32. – bromide, Trans., 726. Acetochloro-\beta-naphthylamine, 961. Acetodimethylphenylhydrazine, 932. Acetofluoranilide, 131. Acetomethylphenylhydrazine, 932. Acetonaloxybutyric acid, 1030. Aceto-a-naphthalide, action of chlorine on, 494. Acetone, action of ethyl oxalate on, 917. action of nitrous acid on, 568. - action of, on p-amidoazobenzene, 479. - and chloroform, action of potash on a mixture of, 569. - chlorotribrom-, 1097. - condensation products of, with aniline and ammonia, 599. — dibromodichlor-, 1098. dichlor-, isomeric forms of, 1092. — diisonitroso-, 28. —— hexachlor-, 1096. monochlor-, 1091. ---- nitroso-, 1104. pentachlor-, 1095.
 tetrachlor-, isomeric forms of, 1094. trichlor-, isomeric forms of, 1093. -- trichlorobrom-, 1098. Acetonebenzoyl phenylhydrazide, 820. Acetonechloroform, acids from, 1030. Acetonehydrazinebenzenesulphonic acid, Acetones, chlor-, 1091. — action of ammonia and amines on, 1098. — chlorobrom-, 1097.

Acetonitrile, synthetic, 712.

Acetonoxyisobutyric acid, 1030.

Acetophenone, action of potassium ferricyanide on, 483.

condensation products with aniline and ammonia, 599.

- dichloro-, 141, 922.

-- di- and tri-chloro-, 141.

— nitroso-, 575, 944.

Acetophenonebenzoyl phenylhydrazide,

Acetophenone-o-carboxanilide, 52.

Acetophenonesul phonic acid, 141.

Acetopropyl alcohol, 33, TRANS., 829,

Acetopropylthiënone, 804.

Acetopyruvic acid, 918.

Acetothienone, brom-, 236. —— derivatives, 236, 237.

Aceto-p-toluidine-o-diazodiethylamide,

Aceto-p-toluidine-o-diazonitroethane,

Aceto-p-toluidine-o-diazopiperidide,

Acetoxime hypochlorite, 795.

Acetoximes, action of acetic chloride on, Trans., 683.

reduction of, 249, 568.

Acetyl compounds, investigation of, 620. Acetylacetone, 127.

- homologues of, 653.

Acetylacetophenone, 943.

Acetyl-o-amidobenzamide, derivatives of, 1043.

Acetyl-o-amidobenzylphenylamide, 1045.

Acetylbenzylidene phenylhydrazide,

Acetylene, action of, on benzene in presence of aluminium chloride, 806.

grouping, refractive equivalent of, 193.

preparation of, 544.

Acetylene anisoil, bromo p-, 1110.

Acetylglutazine, 155.

Acetylhydrocotarnineacetic acid, 1056.

Acetyllævulinic acid, 126.

Acetylnitropianic acid, 47.

Acetylopianic acid, 47.

Acetylphenylamidoacetic acid, 1108.

Acet, lpyrroline, dibromonitro-, 597.

Acetystrimethylene, magnetic rotation of, Trans., 832.

Acetyltrimethylenecarboxylic acid, action of water on, Trans., 829.

--- decomposition of, by heat, TRANS., 831.

Acetyltrimethylenedicarboxylic acid, TRANS., 847.

Acid brown, description and measure-

ment of the spectrum of, TRANS.,

Acid chlorides, action of arsenious sulphide on, 950.

"Acid green," preparation of, 579.
Acids, action of, on zinc containing lead, 1074.

aromatic, synthesis of, 569.

bibasic, action of nitric acid on,

· conductivity of, in dilute solutions, 758.

· conductivity \mathbf{of} mixtures aqueous solutions of, 415.

- constitution of, 443.

- fatty, higher, action of sodium on the ethyl salts of, 1099.

- from drying oil, 798, 913.

- homologous and isomeric, heats of neutralisation of, 95.

- inorganic, complex, 113, 703.

- constitution of, 777. – isohydric solutions of, 416.

- volumetric estimation of, in salts of the alkaloïds, 621.

Aconitic acid, 467.

Aconitine, preparation of, 1125.

Acorns, carbohydrate from, 909.

Acraidehyde, compound of phenylhydrazine with, 932.

Acridaldehyde, 850.

Acridinecarboxylic acid, 850.

Acridylaerylic acid, 849.

Acrylaldehydophenoxyacetic acids, o., m-, and p-, 259.

Acrylic acid, trichloro-, 570.

acids, substituted, 570.

Actinometry, 189.

Affinity, chemical, coefficients of, 548.

- of bases, coefficients of, 324. - residual, TRANS., 593.

Agalite, 452.

Agricultural experiments with iron sulphate as a manure, TRANS., 215.

Air analysis on a new principle, 180.

- atmospheric, absorption spectrum of, 625.

- carbonic anhydride in, 549.

- determination of organic matter in, 532.

- estimation of carbonic anhydride in, 300.

- percentage of oxygen in, 885.

Alabandine, artificial formation of, 781. Albite, microscopic crystals of, in the calcareous rocks of the Western Alps, 1023.

Albumin, absorption spectrum TRANS., 59.

behaviour of hydrogen peroxide to,

— detection of, in urine, 1003, 1150.

Albumin, detection of traces of, 407.

egg, action of oxidising agents on,

with, 683.

--- formation of, in plants, 615.

- in normal urine, 390.

presence of, in vegetable tissue, 407.

separation of globulin from, in urine, 406.

Albuminoïds, determination of sulphur in, 396.

estimation of, in the liquid from cysts &c., 872.

- formation of, in plants, 70.

-- microchemical test for, 407.

of human milk and cows' milk, 388.

Albumoses, 285.

Alcohol and ethereal salts, action of metallic alkyl oxides on mixtures of, Trans., 627.

---- electrolysis of, 94.

Alcohols, action of hydrogen chloride on a mixture of, with aldehyde, 231.

— detection of certain hydrocarbons in, 1038.

monatomic, relations between the boiling points and constitution of, 879.

— polvatomic, action of, on solutions of borne acid and hydrogen sodium carbonate, 790.

---- oxidation of, 651.

Aldehyde, action of hydrogen chloride on a mixture of, with alcohols and phenols respectively, 231.

hydrated, density and magnetic rotation of, Trans., 813.

— resin, 1090.

Aldehyde-collidine, constitution of, 737.
Aldehydes, action of, on ammonium thiocyanate, 580.

- action of sulphur on, 462.

— compounds of, with mercaptans, 126, 462.

condensation of, with aromatic diamines, 494.

condensation of, with ethylaniline, 577.

--- condensation of, with phenols, 494, 825.

fatty, action of aniline on mixtures of, 974.

Aldehydophenoxyacetic acids, p- and m-, 258.

Aldoximes, reduction of, 249, 568.

Aleurone-grains in the seed of Myristica Surinamensis, 1061.

Algaborilla, 498.

Alkali metals, production of, 107.

Alkaline earths, phosphates of, 877.

—— vanadates, 639, 705.

Alkalis, crystallisation of, from alcohol, 889.

—— in silicates, Lawrance Smith's plan for estimating, 181.

Alkaloïd-like bases in Galician petroleum and paraffin oil, 979.

Alkaloïds, 603, 851.

 action of, in the animal and vegetable kingdom, 859.

--- colour reactions of, 58, 752.

— filter-tube for use in the estimation of, by Mayer's reagent, 1002.

— of coca leaves, 1125.

of gelsemium root, 981.

— volumetric estimation of acids in salts of the, 621. Alkannin, 1051.

Alkyl bisulphides, mixed, action of potash on, 371.

bromides, methods for determining the relative stability of, 122.

- hypochlorites from isonitrosocompounds, 795.

a-Alkyleinchonic acids, 504.

Allium ursinum, ethereal oil of, 1089. Allocrotonic acid, chlor-, 1029.

Alloxan, oxidising action of, 1100.

Alloys, action of acids on, 779.

—— estimation of tin and lead in, 304.

— of tin with the platinum metals, action of acids on, 779.

Alluvial deposits, recent, in the Ij and Zuyder Zee, 224.

Allyl alcohol, preparation of, 905.

— bromide, compound of phenyl-hydrazine with, 932.

- iodide, preparation of, 905.

— trisulphide, so-called, 1088. Allylcamphorimide, 489.

Allylmalonic acid, TRANS., 16. Allylphenylhydrazine, 933.

a-Allylpyridine and its derivatives, 160.

α-Allylquinoline, 975. Allylsuccinimide, 489.

Allyltrichloracetamide, 1098.

Alstonite, chemical constitution of, 18. Alum in bread, logwood test for, 1143.

detection of, in flour, 530.

Alumina, action of carbon tetrachloride on, 552.

- action of fluorides on, 556.

--- estimation of, in mineral phosphates and manures, 302.

phosphorescence of, 191, 409, 1067.

phosphorescent, crimson line of, 1006.

-- volumetric estimation of, 865.

Aluminium chloride reaction, 150.

- detection and estimation of, in wine and grapes, 690.

- determination of, in presence of much iron, 182.

- galvanic polarisation of, 415.

- in the ashes of flowering plants, Trans., 748.

- production of, in the electrical furnace, 551.

- sulphate, basic, 448.

detection of free sulphuric acid and aluminium hydroxide in, 182, 530.

Alums, Chilian, 558.

- water of crystallisation of, 218,

Amalgamation, expansion produced by,

Amalgams, conductivity of, 757.

Amides, aromatic, preparation of, 42.

decomposition of, by water and dilute acids, 235.

Amidine-derivatives, 42.

Amidoazobenzene, p-, action of acetone

· relation of diazobenzeneanilide to, Proc., 26.

Wallach's explanation of the isomeric transformation of diazoamidobenzene into, Proc., 27.

Amidoazo-compounds, ortho- 731.

Amidoazo-a-naphthalene, description and measurement of the spectrum of, Trans., 190.

Amidoazo- β -naphthalene, description and measurement of the spectrum of, Trans., 191.

 β -a-amidoazonaphthalene, 590.

Amido-compounds, aromatic, action of silicon tetrachloride on, TRANS., 40.

- formation of haloïd substitution-derivatives of, by the reduction of nitro-derivatives of hydrocarbons,

- — in the animal system, 512.
- — substituted, action of dilute nitric acid on, 1038.

Amido-group in aromatic compounds, displacement of, by hydrothionyl and oxysulphuryl, 478.

displacement of, by the nitro-group in aromatic compounds,

Amidosulphonic acids, action of aldehydes on, 962.

Amines in suint, 792.

paraffinoïd, decomposition by heat of the nitrates of, 230.

primary, formation of, from the corresponding halogen - derivatives, 1037.

Amines, secondary, action of thiocarbonyl chloride on, 822.

tertiary, behaviour of, towards nitric acid, 1041.

Ammonia, absorption of, by clay, 1136. action of sulphur on, 327.

detection of, in a mixture of alkaline salts, 297. - determination of, in arable soil,

297. diffusion of, through the atmo-

sphere, 11. - direct union of, with non-saturated

compounds, 793.

evolution of, from vegetable soils, 860.

· importance of, for the formation of glycogen in the liver of the rabbit, 678.

oxidation of, in presence of platinum or palladium, 635.

– percentage of, in soils, 83.

- poisoning by, 392.

- synthesis of, as a lecture experiment, 442.

Ammonio-mercuric chromates, 218.

Ammonio-zinc chlorides, 551.

Ammonium bromide, combinations of, with ammonia, 631.

- carbonate in spiritus ammonia aromaticus, B.P., estimation of, 398. - chloride, decomposition of, by an alloy of zinc and iron, 443.

- decrease of the compressibility of solutions of, with increase of temperature, 768.

— copper iodides, 772.

— dichromate, preparation of, 449.

--- hydrogen carbonate, decomposition of, by water, 11.

 tension of dissociation of, 10.

--- magnesium arsenate, 204.

- sulphate and Chili saltpetre, comparative manurial value of, 77.

– sulphite, 887.

—– vanadate, 899.

Amphodeuteroalbumose, 286. Amyl nitrite, tertiary, 458.

perchloro, perchlorosebacate, 801. pyrovanadate, Trans., 754.

vanadate, Trans., 753. Amylacetylacetone, 653.

Amylanhydracetonebenzil, TRANS., 433. Amylene, Guthrie's compound of, with

nitric peroxide, Proc., 108. Amyloid, action of pepsin on, 506. Amyrilene, α - and β -, 734.

Amyrins, a- and β -, 733.

Anacardic acid, TRANS., 663.

```
Andalusite from Marabastad, Transvaal,
Andesine from Sutherlandshire, 1022.
Andromedotoxim, 497.
Anemonin, 843.
Anhydracetamidohemipinic acid, 47.
Anhydracetonebenzil, Trans., 420.
Anhydracetophenonebenzil, Trans., 429.
Anhydracetyl-o-amidobenzmethylamide,
  1044.
Anhydracetyl-o-amidobenzoate, 1043.
Anhydrides of bibasic acids, action of
  phenylhydrazine on, 669.
Anhydro-o-amidophenyl carbonate, 38,
Anhydro-bases, notes on, Trans., 691.
    - -compounds, 937.
Anhydrodiazohemipinic acid, 49.
Anhydroecgonine and its derivatives,
{f A}nhydrogluco-o-diamidobenzene, 930.
a-Anhydrophospholuteotungstic
Anilic acid, chlorobrom-, TRANS., 784.
---- acids, 926.
    - - chlor- and brom-, action of
  bromine on, 1106.
Anilidonitropianic acid, 46.
Anilido-opianic acid, 46.
Anilidophthalamic acid, 669.
α-Anilidotribromopropionitrile, 143.
Aniline and its homologues, 134.
     compound of, with silicon fluoride,
  243.
     diazotised, m-nitro-, action of, on
  β-nitraniline, TRANS., 102.
   – dichromate, 927.
 — m-fluoro-, 131.

    p-fluoro-, 113.

   — from phenol, 243.
    -m - nitro-p - chlor-, and its de-
  rivatives, 810.
  --- nitroso-, 1114.

    poisoning, 514.

  --- sebate, 822.

    use of Congo-red in titrating, 90.

Animal body, oxidation in, 610.
    – gum, 26.

    oil, extraction of pyrroline from,

   59.
     system, amido-compounds in, 512.
Animals, nitrates in, 389.
Anisaldoxime, 1041.
Anisamine and its derivatives, 1041.
Anisic alcohol, 39.
 Anisoïl, chlorine-derivatives of, 923.
     - heat equivalent of, 428.
Anisylarsenic acid, 367.
     - anhydride, 367.
 Anisylarsine dichloride, 367.
   — oxide, 367.
  - tetrachloride, 367.
```

Anisylcarbamide, 1041. Anisylthiocarbamide, 824, 1041. Anisylthiocarbimide, 824. Anthracene dihydride, behaviour of, with carbonyl chloride, 593. - tetrachlor- and dichlor-, 831. Anthracene-\gamma-carboxylic acid, monoand di-sulphonic acids, 594. · acids, substituted, 593. Anthracenedicarboxylic acids, $\lceil 1:3 \rceil$ and [2:3], 841. Anthranol, action of bromine on, 1049. brom-, 1049. — preparation of, 965. Anthraguinone dibromide, 1049. - tetrachlor-, 831. Anthraquinonedicarboxylic acids, [1:3] and [2:3], 841. Anthraquinonedisulphonic acid, tetrachlor-, 831. Anthrone, nitroso-, 675. Antialbumid, 285. Antimonious sulphide, detection of stannic sulphide in presence of, 183. Antimonite from Valdagno, 1084, Antimony and arsenic, separation of, 78. known to the ancients, 443. microchemical test for, 300. —— oxide, colour reactions of, 305. — phosphorescence of, 1067. – tartrate, 657. vapour-density of, at a white heat, 888. variations in the electric resistance of, in a magnetic field, 760. volatility of, 445. - volumetric estimation of, in presence of tin, 400. Antimonyl potassium tartrate, heat of formation of, 544. Antipyrine, 601. derivatives of, 603. Apatite, composition of, 781. Apparatus for chemical laboratories, Arabinose, 229. - action of sodium amalgam on, constitution of, 465. Arabinosecarboxylamide, 230. Arabinosecarboxylic acid, constitution of, 465. Arabinosecarboxyllactone, 230. Arabitol, 714. Arabonic acid, 230. Aragonite, altered, from Vesuvius, 18. Arc, electric, formation of, without contact of the electrodes, 626. Argentous compounds, 636, 699. oxide, 700. - sulphide, 700. See also Silver.

Aromatic compounds, influence of light Atomic weight, determination from on the action of halogens in, 807. – polysulphides, synthesis of, 923. - series, chloronitro-derivatives of, Arsenates, phosphates, and vanadates, analogous, Trans., 94. Arsenic acid, normal, saturation of, with barium hydroxide, 7. - --- saturation of, with calcium and strontium oxide, 8. - --- saturation of, with magnesia, 204. - action of, on aqueous silver nitrate, 332. — amorphous modifications of, 888. — and antimony, separation of, 78.
— anhydride, colour reactions of, behaviour of, on exposure to air, 888. — detection of, 397. - microchemical test for, 300. – pentasulphide, 213. — Reinsch's test for, 397. - use of copper containing, for the dearsenification of hydrochloric acid, - vapour-density of, at a white heat, 898. Arsenious and sulphuric anhydrides, compound of, 212. - anhydride, colour reactions of, - compounds of, with halogen salts, 107. – prismatic, monoclinic form and optical properties of, 1015. – iodosulphide, 213. Asclepiadin, 377. Asclepias currassavica and A. incarnata, active principles of, 377. Ash of flowering plants, aluminium in, TRANS., 748. Asiminine, 981. Asparagine, decomposition of, by water and dilute acids, 236. transformation of fumaric and maleïc acids into, 1100. Asparagines, optically active, reciprocal transformation of the, 802. Aspartic acid, conversion of fumaric and maleic acids into, 917, 1100. - -- imide of, 1031. Association, TRANS., 782. Atmosphere, amount of oxygen in,

carbonic anhydride in, 214. formation of active oxygen in,

tion of carbonic anhydride in, 999.

portable apparatus for the estima-

211.

specific heat, 419. weights, determination of, by means of the normal sulphate, TRANS., 676. Augite from the Whin Sill, 1022. Auric acid, non-existence of, 16. - chloride, action of hydrogen on, 450. sublimed, 341. — diamine, 112. – imidochloride, 112. – oxide, 16. Aurin, description and measurement of the spectrum of, TRANS., 167. Auroauric oxide, 15. Aurochlorides of the alkaline metals, solubility of, 16. Aurophosphorus chloride, action alcohols on, 227. Aurous oxide, 15, 112, 450. - sulphide, 1020. Avidity formula, critical remarks on, 633. Avogadro's hypothesis, demonstration of, 698. Azines, 383; TRANS., 98. - new method of preparing, 590. Azo- and diazo-derivatives, researches on the constitution of, TRANS., 102. Azobenzene, action of heat on the vapour of, 572. bromo- and nitro-derivatives of. 663. bromo- and nitrobromo-derivatives of, 478. - description and measurement of the spectrum of, TRANS., 176. halogen-derivatives of, 478. – nitro-, 478. - p-chloro-, derivatives of, 247. - p-cyano-, 248. - p-nitrochloro-, 248. Azobenzenecarboxylic acid, para-, 248. Azobenzenesulphonic acid, p-chloro-, and its derivatives, 248. - acids, bromo-, 478. . Azo-compounds, 40, 663. Azodimethylquinol, 364. β-α-Azonaphthalene, 590. Azonium bases, 729. Azo-opianic acid, 48, 257. Azo-opianphenylhydrazide, 45. Azophenine, 821. — chlor-, 1105. constitution of, 1105. — tetrabrom-, 1105. Azophenines, 1105. Azophenylallyl, 933. Azotoluene, chloro-p-, 248. direct substitution products of, nitro-derivatives of, 479.

Azoxybenzene, nitro-, 479, 664. Azoxytoluene (ortho-), 932.

В.

Bacillus of panary fermentation, 70. Bacteria, anaërobic, culture of, 1135. -changes induced in water by the development of, 615. chemical constituents of, 393. Bacterial life in relation to oxygen, 291. Bacterium aceti, action of, on erythrol, Trans., 641. action of, on glycerol, Trans., - action of, on glycol, TRANS., 638. xylinum, cellulose formed by, TRANS., 643. Barbituric acid, dibromo- and dichloro-, new mode of formation of, 129. Barium carbonate and sodium sulphate, influence of pressure on the reaction between, 332. chloride, hydrates of. 766. --- chromoxalates, TRANS., 388. ---- cuprous thiosulphate, Trans., 39. - hydroxide, hydrates of, 765. manganate, preparation, 552. - microchemical test for, 301. opianylacetate, 47. - phosphates: their applications in acidimetry, 701. - phosphorescence of, 1067. vanadates, 339. Barley, American, 616. - composition of, 73. Barytocalcite, chemical constitution of, 18. Bases, coefficients of affinity of, 324. —- from animal oil, 157. Batteries, voltaic, ferric chloride as an exciting liquid for, 413. Battery, water, simple form of, 412. Beans, iron sulphate as a manure for, Trans., 219. Beer, detection of hop substitutes in, 1146. estimation of carbonic anhydride in, 1144. estimation of glycerol in, 306. Bees-wax, non-acid constituents of, 124. Beet-juice, analysis of, 751. Beetroot, destruction of the nematoids

Benzaldehyde, action of sodium alkyloxides on, 574. nitro-, condensation of, with hydrocarbons, 44. p-nitro-, action of, on quinaldine. 976.Benzaldehyde-greens, manufacture of, Benzaldehydes, nitro-, behaviour of the three isomeric, in the animal body, behaviour of, with ethyl acetoacetate and ammonia, 845. Benzaldi-a-naphthol, 270. Benzaldinaphthyl oxide, 270. Benzaldoxim-o-carboxylic acid, 951. Benzalglycoldinaphthylacetal, 270. Benzalhomo-o-phthalethylimide, 1111. Benzalhomo-o-phthalimide, 726. Benzal-\(\beta\)-naphthylamine, 494. Benzamide, o-amido-, action of nitrous acid on, 667. Benzene, action of acetylene on, in presence of aluminium chloride, 806. - action of methylene chloride on, in presence of alminium chloride, 1102. - action of sulphurous anhydride on, 371. and ethylene, action of heat on the mixed vapours of, 572. bromo-, action of sodium methoxide on, 242. - compounds, constitution of, 1005. - constitution of, 362, 370, 719; TRANS., 208. - crystallised, molecule of, 922. diamidodiimido-, nitrate, 930. - o-dichloro-, 1101. - - action of methyl chloride on. in presence of aluminium chloride, 110Î. — p-dinitroso-, 575. -- fluoro-, 130 — p-fluoronitro-, 131. -- halogen-, haloïds, 806. - heat equivalents of homologues of, 427. - hexachloride, α-trichloro-, 806. hexa-derivatives of, 929. iodo-, preparation of, from phenylhydrazine, 1042. — isomeride of, 1033. - monobromo-, a second, 134. - nitro-, action of light on alcoholic solutions of, 240. - nucleus, substitution the, TRANS., 579. tetramido-, and its derivatives, 476.

Beets, sugar, manurial experiments with,

Beetroots, ammonia in, 71.

Beet, sugar, superphosphate manuring

Benzene-m-azodimethylaniline, acetami-

do-, 41.

831.

Benzeneazodimethylaniline, amido-, 41. Benzeneazonaphthols, 54. Benzeneazo-β-naphtholsulphonic acid, description and measurement of the spectrum of, TRANS., 196. Benzeneazo-\(\beta\)-naphthylphenylamine, Benzeneazophenol, chloro-, 664. Benzene-derivatives, oxidation of, with potassium ferricyanide, 727. Benzenediazoconine, 137 Benzenediazopiperidide, 137. Benzene-p-diazopiperidide, nitro-, 131. Benzenesulphinic acid, m-nitro-, 723. Benzenesulphonic acids, action of cyanamide on, 833. Benzenoïd compounds, an explanation of the laws which govern substitution in, Trans., 258, 583. Benzenylamido-α-naphthyl mercaptan, Benzenylamido-\(\beta\)-naphthyl mercaptan, Benzidine, bromo-, 479. Benzidine-derivatives, 672. Benzil, condensation products of, with ketones, Trans., 431. dihydrocyanide, TRANS., 29. – phenylhydrazine, 138. Benzilidenehydrazinebenzoic acid, 150. Benzodimethyldifurfuran (para)-, 803. Benzodimethylfurfurandicarboxylic acid, 804. Benzoic acid, p-bromo-, 1107. — heat of combustion of, 762.

— nitrochloro-, 946.

— tetrachloro-, and its derivatives, 1046. – acids, chloro-, 828. - peroxide as a dehydrogenising agent, 151. - p-bromo-, 145. Benzomethylamide, o-amido-, 1043. Benzophenone-p-dicarboxylic acid, 484. Benzoquinonecarboxylic acids, 255. Benzotrimethylfurfuran, 263. Benzotrimethyltrifurfurocarboxylic acid, 263. Benzotritolazine, 474. Benzoyl compounds, heat equivalents of, - thioarsenite, **95**0. Benzovlacetoneanilide, 849. a-Benzoyl-\beta-acetylphenylhydrazine, Benzoylaldehyde and its derivatives, Benzoyl-o-amidobenzamide, 1044. Benzoyl-o-amidobenzmethylamide, 1045. Benzoylbenzoic acid, tetrachlorortho-,

Benzoylbutyl alcohol, Trans., 733. - bromide, Trans., 732. Benzoyldichlorobenzoic acid (ortho-), Benzoylethyltoluenesulphonamide, 145. Benzovlmethylketole, 588. Benzoylmethyltoluenesulphonamide, Benzoylphenylamidoacetic acid, 1108. Benzoylphenylhydrazine, unsymmetrical, and its derivatives, 820. Benzoylphenylhydrazines, isomeric, 365. Benzoylphenylsemicarbazide, 820. Benzoylphenyltoluenesulphonamide, β-Benzoylpicolinic acid, 737. Benzoyl- β -propionic acids, alkylated, Benzovlpyruvic acid, 944. Benzoyltoluenesulphonamide and its derivatives, 145. Benzoyltrimellitic acid, 942. Benzoyltrimethylenecarboxylic acid, action of water on, TRANS., 837. Benzyl and benzoyl compounds, 951. - chloride, o-cyano-, 1035. — cyanide, o-cyano-, 1035. - --- o-nitro-, 131. - ethylether, p-bromo- and p-chloro-. and their decomposition by heat and nitric acid, 1103. isoamyl ether, decomposition of, by heat and nitric acid, 1103. - isobutyl ether, decomposition of, by heat and nitric acid, 1103. Benzylacetone-o-carboxylic acid, 144. Benzylamine, 40. --- o-amido-, 10**37.** ο-nitro-, 1037. --- preparation of, 245, 249. Benzylbenzenylamine, 246. Benzyl-derivatives of hydroxylamine, 246, 813. Benzylethylacetic acid, p-nitro-, 490. Benzylidene ethylene bisulphide, 462. Benzylidene-acetoxime, action of dehydrating agents on, 666. Benzylidenebenzoyl phenylhydrazide, Benzylidene-bis-diphenylpyrazolone, Benzylidenecarboxylic acid (ortho-), 951. Benzylidenediphenylpyrazolone, 1121. Benzylidenehydrazinebenzenesulphonic acid, 933. Benzylidenemethylketole, 265. Benzylidenephenylhydrazine, 1105. Benzylidenequinaldine, p-nitro-, 976. Benzylidenerhodanic acid, 1109. – o·amido-, 1109. Benzylideneskatole, 957.

Benzylidenetolylene, 151.

Benzylidenethiobiuret, 580. Benzylimidobenzylcarbaminethioethyl, Benzylimidobenzylcarbaminethiomethyl, 43.

Benzylmaloudiamide, 952.

Benzylmethylketonesulphonic acid, 141. Benzylnitraniline, m- and p-, Trans.,

Benzyl-p-nitraniline, action of diazotised m-nitraniline on, Trans., 114. a-Benzylphenylhydrazine, 1104.

Benzylphthalimide and its o-nitro-derivative, 1037.

- o-cyano-, 1038.

Benzylpyrroline, 843. - action of acetic anhydride on, 843. Benzylrosanilinedisulphonic acids, preparation of, 579.

Berbamine, 284.

Berberideæ, alkaloïds of, 283.

Berberine, oxidation of, with potassium permanganate, 604.

- salts, 604.

Berberonic acid, 1118.

Betorcinol, 39.

Biebrich scarlet, description and measurement of the spectrum of, Trans., 194.

Bile acids, 606, 682.

—— colouring matters, origin of, 290.

— Hüfner's reaction in, 390. pig's, the acids of, 742.

Bilianic acid, 982.

Biotite, 646.

Bis-diphenylpyrazolone, 1121.

Bismarck brown, description and measurement of the spectrum of, Trans.,

Bismuthates, Trans., 77.

Bismuth alkyl compounds, 802.

compounds, fluorescence of, 4.

– organo-, 368.

- conductivity of, for heat in a magnetic field, 1009

– ethyl, 802.

— fluorescence of, 189, 873, 1006.

metallurgy of, 900.

--- methyl, 802.

microchemical test for, 301.

- oxide, colour reactions of, 305.

pentoxide, 340.

phosphorescence of, 1067.

 salts, action of hydrogen peroxide on, 340.

- separation of, from mercury and palladium, 302.

– sulphate, Trans., 679.

— thiocyanate, 566. — valency of, 368.

Bismuthic gold, 707.

Bismuthite from North Carolina, 783.

Bisulphides and bisulphoxides, organic, reaction of, with potassium sulphide,

Bleaching powder, action of ammonia on, 700.

- constitution of, 700.

Bloedite, 1085.

Blood analysis, new method of (hæmatoscopy), 312.

causes of the alteration of, in contact with air, oxygen, and carbonic anhydride, 609.

colouring matter of, behaviour of

sodium nitrite with, 683.

- formation of methæmoglobin in, by the action of alloxantin, 508.

human, sp. gr. of, 608.
liver and flesh, composition of, under varying conditions, 855.

peptones in, 188.

- stains, detection of, in presence of iron rust, 408.

sugar in the, with reference to nutrition, 66.

Blood-serum, new constituent of, 983. Bohemian minerals, analyses of, 644. Boiling point, influence of change of

atmospheric pressure on, 206. - points of the fatty acids, $C_2H_4O_2$

to $C_5H_{10}O_2$, 207. - of the monatomic alcohols and their constitution, relation between, 879.

Bone-black, decolorising power of, 619. Borates, microchemical test for, 300.

Boric acid, conductivity of, 758.

 determination of, 299. —— separation of, 299.

Borneols, inactive, yielding active camphors, 1050.

Bornyl phenylamidoformate, 376. Bornylamine and its derivatives, 376.

Bornylcarbamide, 377.

Bornylphenylcarbamide and thiocarbamide, 377.

Boron, detection of, in milk, &c., 864.

Botryogene, 21. Brain, distribution of lead in, in cases of

lead poisoning, Proc., 71. Brandy from raspberries and straw-

berries, 292.

normal butyl alcohol and higher alcohols in, 714. Brassamide, 233.

Brassic acid-derivatives, 233.

- anhydride, 233. Braunite from Jakobsberg in Werm-

land, 643.

Bread, logwood test for alum in, 1143. Breithauptite, artificial, 17.

"Brilliant-green," preparation of, 580. Brochantite from Chili, 783.

4 m 2

1202Bromanil, TRANS., 148. Bromanilic acid, action of bromine on, constitution of, 1036. Bremides, decomposition of, by the stomach, 508. Bromine, chlorine, and iodine, improved form of apparatus for the separation of, Trans., 690. - - indirect determination by electrolysis of their silver salts, 525.— liberation of, from hydrogen bromide by the action of light in presence of oxygen, TRANS., 804. refractive equivalent of, 193.
solid," use of, in analysis, 688.
vapour, dissociation of, by the electric discharge, 1013. Bromoform, 787. Bromostannic acid, 554. Brookite from Magnet Cove, Arkansas, Brucine and strychnine, estimation of, 853. — constitution of, 505. - distillation of, with zinc, 282. —— ferro- and ferri-cyanides, 852. Brucite from the Ural, 345. Buratite from Laurium, 644. Burette jet, 688. Butaldehyde, normal, condensation of, Butter analysis, 309. Reichert's method of, 309, 1145. --- carrot colour in, 310. — colours, examination of, 621.
— detection of artificial colouring matters in, 1149. determination of, in milk, 752.

from various districts, 996. testing, 308, 309. Butyl alcohol, normal, in Cognac brandy, 714.chloride and ether, tertiary trichloro-, 570. --- perchloro-, perchlorosebate, 801. --- sebate, 801. — vanadate, Trans., 753. Butylchloral hydrate as an antidote for strychnine and picrotoxin, 391. Butyrates, acid, 231. Butvrellite, chemical composition of, Butyric acid, dichloro-, constitution of, ____ a-β-dichloro-, 655, 1029. ____ pure, 29. ___ fermentation. morphology of, 1135.

Butyrochloralbiuret, 1032.

Butyrylacetophenone, 943.

C. Cadaverine, 742. - identity of, with pentamethylenediamine, 125, 1057. Cadmium borotungstate, crystallography of, 334. chloride, ammoniacal compounds of, 637. - heat of hydration of, Trans., 75. - determination of, and separation from copper, 398. - nitrate and sulphate, ammoniacal compounds of, 638. — basic, 1080. - sulphide, titration of, with iodine, Cæsium cobalt nitrite, 12. Caffeine, action of, on voluntary muscle, Calamus root, bitter principle of, 972. Calcimetry, 865. Calcium ammonium arsenate, 108. – arsenate, 108. borate, 108. --- carbonate, effect of manganese on the phosphorescence of, 190. chloride, solubility in water at 0°, 771. - determination of, in presence of manganese, 865. – diisobutyloxamate, 357. hypochlorite, conversion of, into calcium chlorate, 11. – isobutyloxamate, 357. isobutyrate, solubility of, 547, 548. --- orthobutyrate, solubility of, 547, 548. ---- silicostannate, 333. - sulphate, phosphorescence of, 1067. - sulphide, phosphorescence of, 539, 540. - preparation of, with a violet phosphorescence, 2. - tartrate, preparation of, 571. tetramethylenecarboxylate, distillation of, with lime, TRANS., 229. - urate, 469. --- vanadates, 339. Calorimeter, Bunsen's ice, 1073. Calorimetric bomb, 627. Camphene, active, 596. - lævogyrate, action of glacial acetic acid on, 969. Camphol, racemic, 1050. Camphols, isomeric, 375. Camphor, bromo- and chloro-, oxidation of, 1115. - β -chloronitro-, 970.

—— derivatives of, 842, 1049, 1115.

- α-nitro-, 8**42**.

---- β-nitro-, 842.

Camphor, racemic, 1050. Camphoric acid, heat of neutralisation, 205. racemic, 1050. Camphoroxime, derivatives of, 496. Camphors, active, from inactive borneols, 1050. isomeric, 375. mononitro-, 842. Camphyldiphenylhydrazine, 1050. Cane-sugar, absorption spectrum of, TRANS., 59. - influence of temperature on the rate of inversion by hydrochloric acid, 768. Capillarity and evaporation, relation between the theories of, 323. - relation of weight of drops to, 210. Capillary constants and meniscus angle, 101. - meniscus angle, relation of weight of drops to, 210. Capraldehyde, constitution of, 788. Capraldoxime, 795. Caprocyamidine, a-amido-, 850. Caprocyamine, a-amido-, 850. Caprylidene, 788. Caracolite from Chili, 902. Carbamide, action of bromine on, 656. action of, on cyanhydrins, 1054. action of, on phenylhydrazine, 1042. decomposition of, by water and dilute acids, 235. sulphinic compounds of, TRANS., - trichloromethylsulphinate, Trans., 668. Carbazole-blue, 959. - synthesis of, 372. β-Carbocinchomeronic acid, 1118.

Carbodinicotinic acid, 1118.

of derivatives of, 753.

- action of sulphuric acid on, 125.

Carbohydrates, 26.

birge, 341.

1015.

849.

iron, 866.

data, 421, 423.

- of high refractive power, molecular dispersion of, 626. relation between their molecular structure and their absorption spectra. Part VIII, TRANS., 152. determination of the relative values of the four units of chemical activity of the atom of, 711. electrodes, alteration of, 1009. - estimation of, in the organic constituents of water, 184. - in cast iron, influence of silicon on the condition of, 220. --- in the sun, 1065. - oxysulphide, preparation and properties of, 1015. - reaction of absorbed oxygen on, at various temperatures, Trans., 252. — refractive index of, 193. --- soft, electrical resistance of, under pressure, 315. - tetrachloride, action of, on chromyl dichloride and ferric phosphate, 330. - action of, on metallic oxides, 329. - action of, on oxides, 552. action of sulphur on, 1015. thiodichloride, reactions with, 937. Carbonates, ethereal, 37. --- insoluble, preparation of, 221. - normal, detection of, in hydrogen carbonates of the alkali metals, 528. testing of, 80. Carbonic anhydride, absorption of, by leaves, 172. - and ethyl alcohol, specific gravities of mixtures of, 435. apparatus for determining, in carbonates, 999. &c., apparatus for estimating, 398. - formation of fat from, in the dog, - cooling of, on expansion, 880. Carbon, absorption of gases by, Trans., - decomposition of, by chlorophyll, 685. amorphous, in the Saxon Erzge-- estimation of, in air, 300. estimation of, in beer, 1144. - bisulphide, action of chlorine on, - estimation of, in coal-gas, 86, 297.- molecular refractive energy expired, in respiration, estimation of, 507. chains, closed, synthetical forma-- --- in soil, 521. tion of, TRANS., 1, 228, 240, 702, 820, - --- in the air of schoolrooms, 888. - — in the atmosphere, 214, 549.
- — portable apparatus for the combined, determination of, in estimation of, in the atmosphere, 999. - compounds, determination of the quick volumetric determinaconstitution of, from thermochemical tion of, 528. — oxide, poisoning by, 392.

Carbon compounds, homologous, heat of

evaporation of, 9.

1204Carbonyl-o-amidophenol, 477. Carbonylcarbazole, 959. Carbonylferrocyanogen, 649. Carbonylphenylphosphoric dichloride, p- and m-chloro-, 947. Carbostyril, reduction of, 279. Carbo-o-toluylenediphenyltetramine, Carbo-o-toluylenedi-p-tolyltetramine, Carboxyl, introduction of, into aromatic compounds, 935. method for the introduction of, into aromatic hydrocarbons, 254. Carboxylnaphthylorthophosphoric dichloride, a-chloro-, 963. Carboxylphenylorthophosphoric acids (para- and meta-), 947. Carragheen moss, galactose from, 791. Carrot colour in butter, 310. Carrotene, 265. in leaves, 859. Carvacryl dipotassium phosphate, 241. — oxidation of, 241. - potassium sulphate, 241. Carvacrylamine, 721. Carveol, 376. Carvole-derivatives, 475, 923. Carvyl phenylamidoformate, 376. Carvylamine, 249, 377. - and its derivatives, 475. Caseïn, absorption spectrum of, Trans., Castor oil, distinction of, from other fatty oils, 402. Catalysis, 440. Catechol, action of ethylenediamine on, 722.- tetrachloro-, 808. Cattle foods, addition of sugar to, 511. Celestine, pink, 782. - in Nautilus auratus, 781. Cells, living, absorption of colours by, 747. aniline Cellulose, action of sulphuric acid on, fermentation of, 1131. formed by Bacterium xylinum, Trans., 643. Nägeli's starch, true nature of, 460. - nitro-, 792. - starch, true nature of, 686. Ceramics, ancient, analyses of, 218. Cereals, effects of deep or shallow sowing on, 747. Cerebrospinal fluid, proteïds of, 614. Ceriferous Hainstadt clays, 119. Cerite earths, 551. Cerussite, crystallised, 342.

Chelerythrine, 854.

Chelidonine, 854.

Chemical affinity, dependence of, on temperature, 628. - changes produced by sunlight, 93. -- combination, 99. --- constitution and physiological action, 985. - reactions, velocity of, 697. Chemistry and thermodynamics, 431. - integral weights in, 1077. Chili saltpetre and ammonium sulphate, comparative manurial value of, 77. – as manure, 77, 78. - phosphoric acid in, 558. China bicolor, 76. Chinine dibromide, 1123. Chloral, density and magnetic rotation of, Trans., 808. - fate of, in the organism, 613. ---- hydrate as an antidote for strychnine and picrotoxin, 391. density and magnetic rotation of, Trans., 809. — — detection of, 866. — — red dye from, 793. Chloralcyanhydrins, action of carbamide on, 1032. Chloralide, action of phosphoric chloride on, 915. Chloranilic acid, action of bromine on, 1106. constitution of, 1036. Chlorides, compressibility of aqueous solutions of, 696. - dissolved, effect of pressure on the decomposition of, 697. effect of hydrochloric acid on the solubility of, 445. - metallic, anhydrous, preparation of, 702. Chlorination by means of acetic chloride, 932. - influence of light and temperature on, 922. Chlorine, bromine, and iodine, improved form of apparatus for the separation of, TRANS., 690. - indirect determination by electrolysis of their silver salts, 5**2**5. liberation of, from hydrogen chloride, by the action of light in presence of oxygen, TRANS., 802. preparation of, using Kipp's apparatus, 442. - refractive index of, 193. Chloroform and acetone, action of potash on a mixture of, 569. — fate of, in the organism, 612. - new reaction for, 866. - post-mortem detection of, 305. Chloroformamide, 569. Chlorophyll, 972, 1116.

Chlorophyll, absorption bands of, 693. - decomposition of carbonic anhydride by, 685. - functions of, 516. -- granules, formation of starch in, 1136.- presence of, in sponges, &c., 613. Chlorosis in plants, 76. Chlorostannic acid, 554. Choleic acid, anhydrous, 682. · ---- crystalline form of, 683. Cholesterin, 926. acetate, 926. Cholesteryl chloride and its dibromide, Cholic acid, 982. Choline, presence of, in germinating plants, 747. Chondrus crispus, galactose from, 791. Chromate, estimation of, in presence of dichromate, 304. Chromatology, invertebrate, 613. Chrome iron ore, analysis of, 532. decomposition of, 619. paints, analysis of, 304. Chromiodic acid, 776. Chromium, detection and determination of traces of, 531. extraction of, from iron ores, 449. - heptasulphide, non-existence of, oxalates, double, constitution of, Proc., 4. phosphorescence of, 1067.
potassium fluoride, 448.
volumetric determination of, 303. Chromorganic acids, Trans., 383. Chromoxalates, Trans., 383. Chromoxalic acid, Proc., 5. Chromyl dichloride, action of carbon tetrachloride on, 330. Chrysoïdine, description and measurement of the spectrum of, TRANS., Chrysonaphthazine, 1049. Chrysophanic acid, reactions for discriminating, from santonin colouring matters in urine, 406. Chrysoquinone, azines of, 1049. Chrysotoluazine, 1049. Cider ash, 520. Cinchine, action of bromine on, 1122. —— dibromide, 282. - --- α- and β-, 1122. Cinchol, 58. Cinchona alkaloïds, 281, 1122. - bark, ash of, 394. Cinchonic acid, 598, 846. Cinchonidine, estimation of, in quinine sulphate, 623.

— constitution of, 164. — dıbromide, 281. Cinnabar, natural solutions of, 555. Cinnamene of the pyridine series, 737. Cinnamenylpropionic acid, o-amido-, Cinnamic acid, bromo-, a fourth, 582. 517. - series, isomerism in, 582, 830. - acids, bromo-, reduction of the isomeric, 668. - --- Glaser's monobromo-, 829. Cinnamide, a-bromo-, 829. Cinnamyl hydrazine, 665. - thiënyl ketone, 237. Cinnamyldiphenylamine, 814. Citraconic acid, constitution of, 917. --- heat of neutralisation of, 205. Citrazinic acid, Trans., 407. Citrazinimide, TRANS., 406. Citric acid, action of monamines on, 154. fermentation of, 235. - -- heat of neutralisation of, 205.
- use of turmeric as an indicator for, 307. Citrodinaphthylamic acid, a- and B-, Citrodinaphthylamide, α - and β -, 154. Citrodi-p-toluide, 40. Citro-p-ditoluidic acid, 40. Citro-p-toluidic acid, 40. Citro-p-toluidide, 40. Citrotrimethylamide, 154. Citrotrinaphthylamide, α - and β -, 154. Claret, detection of artificially coloured, 91, 187. Clay, absorption of ammonia by, 1136. analysis of, 1139. pink, analysis of, 647. Clays, action of heat on, 785. - constitution of, 785. Coal, estimation of sulphur in, 296. — analysis of, 84. - tar colours, acid, detection of, in wine, 405. — constituents of, 471.

— relation between petroleum and the hydrocarbons of, 648. Coal-gas. See Gas, coal-. Cobalt and nickel, separation of, from iron, 1141. — salts, new class of, 220. separation of zinc from, 182. - variations in the electric resistance of, in a magnetic field, 760. - volumetric estimation of, in presence of nickel, 1141.

Cinchonine, bromination of, 1123.

53.

Cobaltammonium compounds, 775. Cobra-poison, 170. Coca leaves, alkaloïds of, 1125. Cocaine, amorphous, 980. - higher homologues of, 1126. - hydrochloride, rotatory power of, rotatory power of, 506. separation of hygrine from, 1126. Cocamine, 1126. Cocceryl alcohol and its derivatives, 650. Coccerylic acid, 650. Codeïne, 280. Coffee, 1002. amount of caffeine in various kinds of, 394. Coffees, analyses of, 1002. Cohesion figures, 209. Coke, estimation of sulphur in, 296. Colchiceïne, 284. Colchicine, 284. — therapeutic action of, 614. — toxic action of, 515. Collidine, symmetrical dibromo-, 844. Columbite, 20. - from Colorado, 347. — from Graveggia in Val Vigezzo, 645. - from Standish, Maine, 343. - of the Val Vigezzo, mineral associated with, 1085. Concentration, influence of, on the vapour-tension of ethereal solutions, 631. of solutions by gravitation, 1013. Conductivity, electrical, of hot gases, 1071. of mixtures, 877. - of mixtures of aqueous solutions of acids, 415. Conichalcite, 20. Coniferin, new test for, 692. Conine, active, synthesis of, 160. Convolvulin, physiological action of, Conyrine platinochloride, 161, 383. Copper, action of ammonia on, at a red heat, 702. — ammonium iodides, 772. — analysis of, 529. — atomic weight of, 444. - cobalt potassium sulphate, Proc., 53. commercial determination and valuation of, 80. — Cornish, dry assay of, 81. — crystals, artificial, 342. — electrolysis of, 315. - electrolytic estimation of, 1000. - higher oxides of, 334. - influence of, on the estimation of sulphur, 296.

magnesium group, isomorphous mixtures of sulphates of, Proc., 53. — potassium sulphate, Proc., 53. - microchemical test for, 300. - mineral from Sunnerskog, Sweden, 343. --- minerals, rare, from Utah, 19. - native, crystallisation of, 341. --- nitride, 702. - oxide, compound of manganesesesquioxide with, 1081. - platinum, and iron, alloys of, 778. - polarisation of, by the extension of the surface, in contact with a liquid conductor, 757. - salts, electromotive dilution constants of, 1072. separation of, from lead, cadmium, manganese, &c., 530. separation of, from mercury and palladium, 302. - slag of bright red colour, 447. sulphate, dissociation of, 208. - reduction of, during alcoholic fermentation, 171. solubility of, 772. testing, 1139. — wet assay of, 80. ---. See also Cuprous. Cordierite, altered, from Tuscany, 1086. Corrosive sublimate solutions, stability of, 774. Cosmical powder which fell on the Cordilleras, near San Fernando, Chili, Cotton oil, properties of, 536. Coumaraldehydes, nitro-, 939. Coumaric acid, para -. See Paracoumaric acid. Coumarin, amido-, 939. - nitro-, 939. Cows, amounts of nitrogen ingested and recovered in manure, 175. Creatines, 850. Creatinine in urine, 513. - reactions of, 1056. Weyl's reaction for, 1122. Creatinines, 850. Cresol, dimitro-, colour reactions of, 624. ethers, heat equivalent of, 428. Cresolcarboxylic acid, 45. Cresylamidines, 1034. Cresyltrichloracetamide (ortho-), 1098. Cristobalite from Mexico, 559. Croceïne scarlet, description and measurement of the spectrum of, Trans., 195. Crocoisite, artificial production of, 781. Croconic acid, formation of, from benzene-derivatives, 805.

Copper iron potassium sulphate, Proc.,

Croton oil, 798.

Crotonic acid series, isomerism in, 656, 1029.

—— acids, substituted, 797.

Crotonylearbamide, chloro-, 1032.

Cryptopine and its salts, 1122.

Crystal beds of Topaz Butte, 452. Crystallisation by diffusion, 101.

Cubebin, 970.

Cumene- and cymene-derivatives, reciprocal transformations of, 36, 471.

series, intramolecular changes in the propyl-group of, 132.

ψ-trinitro-, reduction of, 36, 659.
 Cumeneazo-β-naphtholdisulphonic acid, description and measurement of the spectrum of, Trans., 187.

Cumene-o-sulphonic acid, 264.

Cumenylpropionic acid, 132. Cumic acid, heat of combustion of,

762. Cumidic acids, α - and β -, 52.

 ψ -Cumidine, 660.

ψ-Cumidinesulphonic acid, acetylnitro-, 659.

____ nitro-, 953.

Cuminamide, 43.

Cumylamine, 1039.

 ψ -Cumylenediamine (meta-), 659.

Cumylthiocarbamide, 1039. Cuprammonium salts, 773.

Cuprite, artificial, crystallised, 342.

Cuprous barium thiosulphate, TRANS., 39.

potassium thiosulphate, hydrated and anhydrous, TRANS., 38.

Curare, 1125.

Curine, 1125.

Cyanacetamide, 796.

Cyanacetic acid, 796.

Cyanacetophenone, 826.

Cyanamide, action of, on benzenesulphonic acids, 833.

Cyananiline, 928.

Cyanazobenzene, 248.

Cyanhydrins, action of carbamide on, 1054.

Cyan-m-nitraniline, 929.

Cyanobenzoic acid (meta-), and its derivatives, 484.

Cyanobenzoic acids, behaviour of, on distillation, 484.

Cyanogen, compressibility and refractive index of, 753.

estimation of, in coal gas, 86.liquid, vapour-tension of, 764.

Cyanphenine, synthesis, 363. Cyanphenylhydrazine, 929.

Cyanuric acid and its compounds with ethers and alcohols, 789.

paring, Trans., 269.

Cyclothraustic acid, 979.

Cymene- and cumene-derivatives, reciprocal transformations of, 36, 133.

chloro- and bromo-, from thymol, 37.

--- dibromo-, 147.

--- oxidation of, 147, 240.

Cyanxylide, 929.

Cymyl, para-. See Paracymyl.

Cyprusite, 644.

D.

Dahlia tubers, crystalline deposits in, 1136.

Dambose and inosite, identity of, 909.

Dehydracetic acid, TRANS., 484.
—— bromo-, TRANS., 490.

---- oxime of, Trans., 493.

Dehydracetonebenzil, TRANS., 420.

Dehydrochinine, 1123.

Dehydrocholic acid, phenylmercaptan, 982.

— phenylmercaptan-phenylhydrazine, 982.

Dehydrocinchine, 282.

Dehydrocinchonine and its chloride, 281, 282.

Dehydrogenation by means of benzoic peroxide, 151.

Deliquescence and efflorescence of salts, relation of, to the vapour-tensions of their saturated solutions, 208.

Density, maximum, displacement of the point of, by pressure, 695.

—— of weak aqueous solutions of salts, 209.

Desoxybenzoins, 829.

Desoxycholic acid, 683.

Destinezite, 709.

Deuteroalbumose, 285.

Deuterovitellose, 286.

Dextrin, alcoholic fermentation of, 171.

— detection of, in wines, 692.

--- precipitation of, by iron, 401.

Dextroisoterpene, 969.

Dextrose, action of potassium permanganate in neutral solutions, 566.

action of o-toluylenediamine on, 476.

compounds of, with o-phenylene-diamine, &c., 475.

--- determination of, 534.

---- from phlorizin, TRANS., 636.

---- tetrabenzoate, 228.

Diabase porphyrité from Petrosowodsk, 454.

Diabetes and glycerol, 985.

Diabetic patient, lævorotatory \$-hy-

droxybutyric acid in the blood of, Diacetobenzylpyrroline, 843. Diacetonmethylpyrroline, 843. Diacetylamidonaphthyl mercaptan, 962. Diacetylamidophenyl mercaptan, 962. Diacetylphenylhydrazine, 366. Diacetyltetramethylenedicarboxylic acid [1, 2, 1, 2], Trans., 26. Dialdehydes, action of hydroxylamine and phenylhydrazine on, 482. Diallyl, tetrabromo-, carbinol acetate, 353. Diallyloxalic acid, 361. Diamide or diamidogen, 715. Diamonds, phosphorescence of, 1067. Dianilidophthalyldiamide, 670. Dianisylarsine chloride, 367. Dianisylthiocarbamide, 1041. Dianthryl, dibromo-, 965. – -derivatives, 1049. preparation of, 965. Diaspore from Newlin, Pa., 343. Diastase, 165, 387. --- action of, 166. --- absorption-spectrum of, Trans., 60. deterioration of, by the action of heat, 608. pure, preparation of, 1117. Diauromethylamine, 112. Diazoamidobenzene, action of phenol on, 480. – m-dinitro-, Trans., 107. ---- p-dinitro-, TRANS., 102. Wallach's explanation of the isomeric transformation of, into amidoazobenzene, Proc., 27. Diazoamido - compounds, 137, TRANS., 102. and their constitution, Trans., 434, 448. ---- constitution of, 818. dinitro-, decomposition of, by cold hydrochloric acid, Trans., 436. reaction of, with phenols, 664. Diazoamido-o-toluene, 819. Diazoamidoxylene, 819. Diazoazotoluene (ortho-), action of α naphthol and β -naphthol on, 731. - action of β -naphthylamine on, 731. Diazoazotoluene salts (para-), 732. Diazoazotoluenimide (para-), 732. Diazobenzene chloride, decomposition of, by hydrochloric acid, Trans., 106. Diazobenzeneanilide, relation of, amidoazobenzene, Proc., 26. Diazobenzylamidobenzene, m-dinitro-, TRANS., 113. - p-dinitro-, Trans., 112.

Diazo-compounds, 40, 137, 817. - decomposition of, by aniline, 136. Diazoethylamidobenzene, m-dinitro-, Trans., 108. Diazoethylresorcinol chloride, 661. Diazonaphthalenesulphonic acid, 375, Diazonitro - ψ - cumenesulphonic acid. 953. Diazosuccinic acid, derivatives of, 33. Diazotised metanitraniline, action of, on p-nitraniline, Trans., 102. Diazotolylene-o-sulphonic acid (para-), Diazoxybenzoic acid, 485. Dibenzoylphenylhydrazines, isomeric, Dibenzyl, p-dinitro-, preparation of, 836. --- o-dinitrocyano-, 131. --- ether, Trans., 700. Dibenzylamine and its derivatives, 246. Dibenzylanilide, nitroso-, 247. · and its derivatives, 812. Dibenzyldicarboxylic acid (ortho-), 958. Dibenzylethylamine, 813. Dibenzylglycosine, Trans., 555. α-Dibenzylhomo-o-phthalbenzylimide, a-Dibenzylhomo-o-phthalic anhydride, a-Dibenzylhomo-o-phthalimide, 1111. Dibenzylhydroxylamine, derivatives of, · nitroso-, 246. Dibenzylidenedimethylenediamine, 493. Dibenzylmalonic acid, 952. Dibenzylthiocarbamide, action of alkyl iodides on, 43. Dibrassidin, 233. Dicarvacrylamine, 721. Dicoumarin, preparation of, Trans., 62. Dicyanobenzophenone (para-), 484. Dicyanophenylhydrazine-compounds, Didymium salts, variations absorption-spectra of, 873. spectra of, 1008. – sulphate, Trans., 682. --- variations in the absorption-spectra of, 537. Dierucin, 233. Diethenyltetramidobenzenes, 476, 477. Diethoxycollidine, 845. Diethoxyresorcinol, amido-, 661. Diethylbismuthine bromide, 803. Diethylene bisulphide derivatives, 122. tetrasulphide, 462, 954. α-Diethylhomo-o-phthalic acid, 1111. - anhydride, 1111.

 α -Diethylhomo-o-phthalimide, 1111.

Diethylidene tetrasulphide, 463. Diethylphenylthiocarbamide, 823. Diethylpyridine, $a-\gamma$ -, 60. Diethylresorcinol, o-amido-, 662. Diethylresorcinol-o-azoresorcinol, 662. Diethylresorcinol-p-azoresorcinol, 662. Diethylsulphonedimethylenethane, 123. Diethylsulphonemethane and its bromo-derivatives, 124. Diethylsulphonepropylmethylmethane, Diethylthionine, 667. Diethyltrichloracetamide, 1098. Diffusion, liquid, 440. Diffusion-residues, 521. Difurfuran, 262. Digestive juices, nitrogenous contents of, Digestion and digestive secretions in the horse, 744. - animal, versus pepsine, 513. — artificial, 388. comparative absorption of fish and flesh in the alimentary canal, 1130. gastric, a first product of, 609. - in the pig, 512. — intestinal, in the horse, 610. natural and artificial, 167. — of fibrin by trypsin, 1130. period required for, in the pig, 684. Digluco-o-diamidobenzene, 930. Diglycerylmethylal, 905. Dihexine, 566. Dihydrazophenine, 1106. Dihydrocamphene-derivatives, 676. Dihydrocoumaric acid and its salts, TRANS., 68. Dihydrocoumarin, TRANS., 70. Dihydroethyldimethylquinoline, 976. Dihydrohydroxylepidine, 278. Dihydronaphthalene, 719. Dihydrosparteine and its derivatives, Dihydroterephthalic acid, 371. Dihydrotoluquinoxaline and its derivatives, 383. Dihydroxyamidopyridine, dichloro-, 156. Dihydroxybenzophenone (ortho-), and its derivatives, 152. Di-o-hydroxybenzylidenethylenediamine, 493. Dihydroxydihydroquinolinelactone, 48. Dihydroxydurylic acids, 255. a-Dihydroxymethylcoumarilic acid (meta-), 263. β - γ -Dihydroxymethylpseudocarbostyril, γ-Dihydroxynaphthalene, Proc., 43. Dihydroxyphenylquinoline, 847. Dihydroxypiperohydronic acids, and β - γ -, $\bar{4}88$.

Dihydroxyquinoline, 973.

Dihydroxytartaric acid, condensation of, with secondary hydrazines, 579. diphenylhydrazine, reduction of, 467. Dihydroxytoluic acid, 669. Diisoamylacetal, 231. Dissoamylphenylamine, 721. Dissobutylamine salts, 461. Diisobutyloxamide, 357. Diisobutylphenylamine, 721. Diisopropylacetoxime and its behaviour with acetic chloride, Trans., 684, 685. Diisopropylbenzylidenemethylenedi**a**mine, 493. Diketones, action of hydroxylamine on, 373.preparation and hydrolysis of hydrocyanides of, Trans., 29. Diketonic acids, two new, 261. Dilution constants, electromotive, silver and copper salts, 1072. β -Dimethacrylic acid, 359. Dimethamidomethylphenazine, 139. Dimethamidophenyl hexyl ketone, 815. Dimethoxyldihydrochloroquinolinelactone, 48. Dimethoxyhydrocarbostyril-lactone, 48. Di-o-methoxybenzylidenethylenediamine, 493. Dimethoxycinnamic acid (meta-ortho-), Dimethoxyquinoline, 973. - new, 1119. Dimethyl ethyl carbinol, tests for the purity of, 1142. Dimethylacetal, trichloro, 28. Dimethylacridine, 928. Dimethylanhydracetonebenzil, TRANS., Dimethylaniline, action of aldehyde and heptyl chloride on, in presence of zinc chloride, 814. - o- and p-chloro-, and their derivatives, 474. – isodinitro-, 245. manufacture of, 474, 576. Dimethylanthracene [2:3], 841. Dimethylanthragallol, 592. Dimethylanthraquinones $\lceil 1:3 \rceil$ [2:8], 841.Dimethylbenzidine, tetranitro-, 245. Dimethylbenzoylacetic acid (orthometa-), 253. Dimethylbenzoyl-\$-propionic acid (ortho-para-), 827. Dimethylbenzylamine, 721. Dimethylbenzylidenethylenediamine, Dimethylbismuthine bromide, 802. chloride, 802.

- hydroxide, 803.

Dihydroxyquinone, p-dinitro-, 134.

Dimethyldibenzylammonium chloride, Dimethyldicoumaric acid, 830. Dimethyldicoumarin, 830. Dimethyldipiperidyl and its derivatives, Dimethylene disulphone, derivatives of, 463.Dimethylgentisic acid, 140. α - β -Dimethylglyceric acid, 30. Dimethylliomo-o-phthalimide, 51, 726. Dimethylhydroxybromopyrimidine, 1054. α-Dimethyl-β-hydroxyisocaproic acid, 1099. Dimethyl-\beta-hydroxynaphthaquinolinesulphonic acid, 681. Dimethylindole [1':3'], 149. - $\begin{bmatrix} 2' : 3' \end{bmatrix}$, 149. - $\begin{bmatrix} 3 : 2' \end{bmatrix}$, 956. Dimethylindolecarboxylic acid, 149. Dimethyllevulinic acid, 921. Dimethyl-a-naphthaquinoline, 681. Dimethyl-B-naphthaquinoline and its derivatives, 681. Dimethyl-β-naphthaquinolinesulphonic acid, 681. Dimethylnitrosamine, formation from dimethylamine nitrate, 230. β -Dimethylphenylpyridinedicarboxylic acid, 681. Dimethylphenylthiocarbamide, 823. α-γ-Dimethylpicolinic acid, 378. Dimethylpiperidine, action of bromine on, 164. Dimethylpiperidines, α - α - and α - γ , 64, Dimethylpyridine [2:6], 500. platinochloride, 378. Dimethylpyridines, a-a- and a-y-, 59. Dimethylpyrrolineacetic acid, 276. Dimethylpyrrolinecarboxylamide, 277. Dimethylpyrrolinecarboxylic acid monanilide, 277. Dimethylpyrrolinedicarboxylacetic acid, 276.Dimethylpyrrolinedicarboxyanilide $[2:4:\overline{3}:5], 277.$ Dimethylpseudocarbostyril, 159. α - β -Dimethyl- δ -pseudoquinoxaline, 1044. β - γ -Dimethyl- δ -pseudoquinoxaline, 1044.1:3 Dimethylquinaldine and its derivatives, 381. Dimethylquinol and its derivatives, 364. Dimethylquinoline, α - β -, 974. $[1:\bar{4}], 502.$ Dimethylquinoline-α-acrylic acid, 382. Dimethylquinolinecarboxylic acid, 382. 1:3 Dimethylquinolinesulphonic acid, 382.

iodide, 364. Dimethyltetrahydroquinoline, 279, 976. α-α-Dimethylthiënylglyoxylic acid, 805. Dimethylthioformaldinium iodide, 28. Dimethylthionine, 667. Dimethyltrichloracetamide, 1098. β - β -Dinaphthoylcarbamide, 840. Dinaphthoylhydroxamic acids, β - β -, and α - β -, 840. Dinaphthyl, diamido-, derivatives, 56. - dimido-, hydrochloride, 56. – dinitro-, 56. – nitro-, 56. Di-a-naphthyl phenyl carbinol, 943. Dinaphthylphenylmethane, 943. Dioxydiethylaniline, 723. Diphenacylacetic acid, 261. Diphenacylmalonic acid, 261. Diphenanthryleneazotide, Trans., 101. Diphenic acid, brominated derivatives of, 268. - condensation of, 589. - formula of, 589. Diphenyl, chlorodiamido-, 247. - derivatives of, 589. - dinitro-, 673. --- diphenyl ketone, 589. -- ethylene ketone, 827. --- methyl ketone, 589. — sebacamide, 822. - symmetrical m-diamido-, 673. - tetramido-, and its derivatives, 672. Diphenylacetyl, 589. Diphenylallidenethylenediamine, 493. Diphenylamidine, 1040. Diphenyl-m-amido-p-tolylcarbamide, 936.Diphenylamine, action of cinnamic acid on, in presence of zinc chloride, 814. - and its homologues, boiling points of, 812. – from phenol, 243. p-nitroso-, 244. Diphenylbenzoylthiosemicarbazide, 820. Diphenylcarboxylic acid (ortho-), condensation of, 589. Diphenylcyanine chloride, 364. Diphenyldihydrazine, 958. Diphenyldihydropyrazine, 493. Diphenyldihydroxylamine, 1115. Diphenyldimethylindole, 958. Diphenyldinitrosohydrazine, 958. Diphenylene ketone, mono- and bromo-, 269. Diphenylenediacetonehydrazine, 958. Diphenylenedihydrazinepyruvic Diphenyleneketonecarboxylic acid, 589. Diphenylene-a-tetramethyldipyrroline (para-), 273. Diphenylethane-derivatives, 673.

Dimethylquinoltrimethylammonium

Diphenylglyoxaline, Trans., 557. Diphenylhydroxyethylamine and its derivatives, 492. Diphenylindole, 956. Diphenylizindihydroxytartaric acid. 598. Diphenylmethylphthalide, 265. Diphenylmethylpyrazoline [1:5:3],678. Diphenylmethylpyrazolone, 1121. Diphenylnaphthaleneazammonium hydroxide and its salts, 731. Diphenylnaphthylenediamine, 839. Diphenyl-mand p-nitrophenylcarbamide, 936. Diphenyl-m-nitro-p-tolylcarbamide, 936. Diphenylphthalidecarboxylic acid, 267. Diphenylpyrazolecarboxylic acid, 944. Diphenylpyrazolone and its derivatives, 1121.Diphenylpyrazoloneazobenzene, 1121. Diphenylpyrroline [2:5], 736. Diphenylquinoline [2:4], 849. Diphenylseleniocarbamide, 43. Diphenylsemicarbazide, 958. Diphenylsuccinimidine, 931. Diphenylsulphonephenyl ether, 372. Diphenylsulphoxide, 371. dinitro-, 372. Diphenylthiosemicarbazidcarboxylic acid, 150. Diphenyl-p-toluylamide, 935. Diphenyl-m-xylylmethane, 265. Diphenyl-o-xylylmethane, 267. Diphthalide ether, 951. Dipicrylhydroxylamine, 664. Dipiperidyl and its derivatives, 161. Dipiperidylcarbamide, 385. Dipiperidylmethane, 1027. Dipiperidylphenylmethane, 1027. Dipropionylpyrroline, 844. Dipropyl acetoxime, TRANS., 689. action of nitric chloride on, TRANS., 689. carbinol, 353. Dipseduocumyl ethylene ketone, 827. Dipyr from Connecticut, 903. Diquinoline, oxidation products of, 979. β -Diquinoline ethiodide, 64. peculiar formation of, 63. β-Diquinolinedisulphonic acid, 64. Diquinolyl and its derivatives, 848. Diquinolyls, α -4'- and β -4'-, 600. Diquinovltetroxime, anhydride of, 809. Diquinoyltolazıne, 473. Dispersion formulæ, experimental examination of the older and more recent, influence of, on molecular refractive power, 191. Dispersion in rock salt, 754. Dis-phenyldimethylpyrazolone, 601. Dis-phenylmethylethylpyrazolone, 602.

10, 11. of copper sulphate, 208. ---- of hydrated oxalic acid, 915. of iodine and bromine vapours by the electric discharge, 1013. of salts containing water of crystallisation, 207. — rate and vapour-tension of, 696. — velocity of, 100. Dissolution, changes in volume and energy accompanying, 436. laws of, 548. nature of, TRANS., 593. of salts, heat of, influence of temperature on, Trans., 290.
— theory of, Trans., 779. Dissolved substances, volatilisation of, during the evaporation of the solvent, 211.Distillation, fractional, under reduced pressure, apparatus for, 884. Disulphidecinnamic acid, 1109. Diterramethylene ketone, TRANS., 236. Dithioanisylthiocarbamide, 823. Dithiocarbamide dibromide, TRANS., 378. dichloride, action of hydrogen sulphide and of cyanides on, Trans., 380. di - trichloromethylsulphinate. Trans., 666. Dithiocresolsulphonic acid, 492. Dithiodiethylaniline, 723. Dithioethyldimethylmethane, 126. Dithiophenyldimethylmethane, 126. Dithio-p-tolyldicarbamide, 473. Ditlymyl carbonate, 38. Dithymylamine, 721. Ditolane-azotide, TRANS., 101. Ditolyl carbonate (para-), 38. ethylene ketone (para-), 827. ketone, 940. Ditolylnaphthylenediamine (para-), 839. Di-m-xylyl ethylene ketone, 827. Di-p-xylyl carbinol, 942. ethylene ketone, 827. - ketone, 94**1**. Di-p-xylylphenylmethane, 941. Di-xylylphenyl-\(\beta\)-pinacoline, 941. Dog, formation of fat from carbohydrates in, 288. Dogs, new-born, glycogen in the liver of, 167.Drops, weight of, and their relation to the constants of capillarity and the capillary meniscus angle, 210. Drosera Whittakeri, colouring matters of, TRANS., 371. Duboisine, 740. Dufrenite, new variety of, from Cornwall, 457.

Dissociation and evaporation, Trans.,

of ammonium hydrogen carbonate,

Duplodithiacetone, 1045.

Duplothiacetone, 463.

Dyes, a new class of, 822.

- and coloured substances, a study of, TRANS., 152.

 qualitative tests for, 91. Dysvitellose, 286.

E.

Earth, black, Russian, 687.

Earth-nut, composition of the inner brown skin of, 519.

Earths from fergusonite, 706.

- rare, components of the, yielding absorption spectra, 890.

Eau Celeste, 773.

Ecgonine, 284, 682, 741.

Efflorescence and deliquescence of salts, relation of, to the maximum vapour tensions of their saturated solutions, 208.

Electric accumulators, 418.

- current, application of electrolysis to the standardising of, 315.

Electrical conductivity of hot gases, 1071.

— of gases and vapours, 4.
— of solid substances at high

pressure, 5. Electricity, atmospheric, connection of, with the formation of ozone in the air, 211.

- silent discharge of, Trans., 622. voltaic, development of, by atmo-

spheric oxidation, 1008.

Electrochemical investigations, new apparatus for, 200.

Electrodes, carbon, used for the electrolysis of acids, alteration of, 1009. Electro-dissolution and its use in ana-

lysis, 531. Electrodynamometer, absolute, 200.

Electrolysis, application of, to standardising of electric currents and potential meters, 315.

- of carbon compounds, 94. - of silver and copper, 315.

Electrolytic actions, non - reversible,

thermoelectric law respecting, 1072.

— polarisation produced by small electromotive forces, 317, 541.

Electromotive dilution constants of silver and copper salt, 1072.

- force of a constant voltaic cell with moving plates, 314.

of thermo-elements, consisting of metals and solutions of their salts,

- of voltaic cells having an aluminium plate as electrode, 315.

Electromotive force produced by light in selenium and the consequent after action, 693.

- forces, small, electrolytic polarisation produced by, 317, 541.

Element, new secondary, 314.

Elements, existence of certain, in the sun, 1065.

 occurring in rare earths, 890. — some probable new, 107.

Elpasolite, 344.

Emetine, 980

Emmonsite, 344.

Enargite from Montana, 707.

Endlichite, 347.

Energy, changes in, accompanying solution, 436.

Ensilage, experiments with, in Holland, 106Ž.

Eosin, dichloro-, 832.

- group of dyes, action of, as photographic sensitisers, 874.

Epidote, white, from the Beagle Canal, Terra del Fuego, 350.

Epsomite from Poland, 1021.

Equilibrium, conditions of, of two substances in the three states, solid, liquid, and gaseous, 629.

Equivalents, thermodynamic, 99.

Erbium and thulium, phosphorescence of, 1068.

Erebodium, 107.

Ergot of rye, source of trimethylamine

Ericaceæ, presence of cinnamic acid in the, 517.

Erucamide, 233.

Erucanilide, 233.

Erucic acid and its derivatives, 233.

- anhydride, 233.

Erythrene bromide, 787, 789.

— derivatives, 352.

— dibromide, dibromo-, 789. — tetrabromide, 789.

Erythrol, 353.

action of Bacterium aceti on, TRANS., 641.

— bromhydrin, 354. - oxidation of, 652.

Erythrolhydroxyanthraquinonecarboxylic acid, 1049.

Ethamidoformic chloride, 358.

Ethane, trinitro., 466.

Ethanes, chloro-, action of ammonia on,

Ethenylamido-a-naphthyl mercaptan, 839, 961.

Ethenylimidobenzanilide, 42.

Ethenyl-β-β-naphthalenediamine, 729.

Ethenylnitrotriamidobenzene, 476.

Ethenyltetramidobenzene, 477.

Ethenyltoluylenediamine, 247.

Ethenyltriamidonaphthalene and its derivatives, Trans., 691.

Ether, thermal properties of, 320.

Ethereal carbonates, 245.

---- oils, 595, 596.

— salts and alcohols, action of metallic alkyl oxides on mixtures of, Trans., 627.

Etherification by double decomposition, 458.

Ethers, mixed, decomposition of, by heat and nitric acid, 1103.

— of the phenol series, heat equivalents of, 428.

Ethocarboxyl-α-methylphenylpyrrolineacetic acid (para-), 274.

β-Ethocarboxyl-α-methylphenylpyrroline-m-benzoic acid, 274.

Ethoxybenzoic sulphinide (para-), 144. Ethoxybromophenylpyrazoline, 933.

Ethoxybromosalicyhc acid, 487.

Ethoxychlorisoquinoline, 62.

Ethoxydibromosalicylic acid, 487.

Ethoxylepidine, 159.

Ethoxylutidme, 499, 501.

Ethoxymethenylamidophenol, 135.

Ethoxymethenylphenylenediamine, 135. Ethoxymethenylfoluylenediamine, 135. γ -Ethoxymethylpseudocarbostyril, 978. Ethoxyquinol, 661.

Ethoxyquinone [3:1:4], 661.

Ethyl acetoacetate, action of ethylene bromide on the sodium-derivative of, Trans., 820.

action of, on aromatic diamines, 247.

on, 915.

- synthesis with, 159, 275, 601. acetocyanacetate, 1029.

---- acetomalonate, decomposition of, by nitrous acid, 717.

acetonedicarboxylate, action of ammonia on, 155.

on the sodium-derivative of, Trans., 820, 845.

on, 467.

---- acetopyruvate, 917.

acetosodacetate, action of trimethylene bromide on, Trans., 702.
 acetotrimethylenecarboxylate, 33.

—— acetyl-o-amidobenzoate, 1043. —— acetylcitrate, Trans., 404.

— acetyllutidenedicarboxylate, 500.

Ethyl acetyltrimethylenecarboxylate, Trans., 825.

TRANS., 837.

on, TRANS., 841.

---- α-anilido-α-cyanopropionate, 260. ---- anilidosuccinate, 260.

- alcohol and carbonic anhydride, specific gravities of mixtures of, 435.

properties of a mixture of, TRANS., 755.

dichlor-, and its derivatives,
713.

— estimation of methyl alcohol in presence of, 1142.

TRANS., 778.

—— alkali tartrates, 918.

—— allylcyanacetate, 796.

—— amidoacetoacetate, condensation products of, with hydrochloric acid, 501.

—— o-amidobromophenylvalerate hy-

drochloride, 486.

ate, 846.

— m-amidotolyldimethylpyrrolinedicarboxylate, 276.

---- amyl bisulphide, 242.

---- azobenzene-α-methylphenylpyrroline-β-carboxylate, 274.

---- azopyromellitate, 257.

--- o-benzodimethyldifurfurandicarboxylate, 803.

—— p-benzodimethyldifurfurandicarboxylate, 803.

— m-benzodimethyldifurfurocarboxylates, α- and β-, 262.

- enzoic sulphinide, 835.

--- benzotrimethyltrifurfurocarboxylate, 263.

benzoylacetate, action of ethylene bromide on the sodium-derivative of, Trans., 820.

----- action of trimethylene bromide on, 32.

— preparation of, 583.

— pyrazolone-derivatives from,
1121.

benzoylcyanacetate, 1031.

---- benzoylmalamate, 34. ---- benzoylpyruvate, 943.

— benzoylsodacetate, action of trimethylene bromide on, TRANS., 702, 726.

Ethyl hongylagotes setie a sawharelete	Fither link and an love I con
Ethyl benzylacetoacetic-o-carboxylate, 144.	Ethyl diphenacylmalonate, 261.
benzyliodomalonate, 916.	diphenylpyrazolecarboxylate, 944.
- brassate, 233.	—— disodiopentanetetracarboxylate, Trans., 243.
ω-bromethylacetoacetate, 33,	disulphaminehenzoete 836
Trans., 833.	— disulphaminebenzoate, 836. — duroquinonecarboxylate, 255.
p-bromobenzoate, 1107.	erucate, 233.
a-bromopropionate, 912.	ether, heat of combustion of, 425.
bromosuccinate, action of ammonia	ethylcyanacetate, 796.
on, 1031.	ethylenecarbanilate, 578.
—— butyromalonate, 717.	ethylenedi-β-amido-a-crotonate,
butanetetracarboxylate, TRANS., 19.	494.
camphorimidoacetate, 1031.	ethylene-α-dimethyldiphenyldi-
carbonate, thio-derivatives of,	pyrroline-β-dicarboxylate, 273.
1029.	ethylmalonate, 360.
	fumarate, conversion of, into
	methyl fumarate, Trans., 627.
	99. magnetic rotation of, Proc.,
cinnamate, conversion of, into	homo-o-phthalate, 1112.
methyl cinnamate, Trans., 628.	
citraconate, magnetic rotation of,	— hydrazinebenzopyruvate, 150.
Proc., 99.	hydrogen methyldehydrohexonedi-
cresolcarboxylate, 45.	carboxylate, Trans., 741.
cyanacetate, 797.	phenylsuccinimidate, 932.
cyanacetoacetate, 799, Trans., 287.	m-hydroxycoumarilate, 262.
cyanide, solid a-dichloro-, 1024.	hydroxydimethylpyrrolinedicarbo-
cyanomalonate, 1030.	xylate, 275.
—— cyanosodacetate, 796.	
— diacetoracemate, Trans., 369.	xylate, 1053.
diacetotartrate, Trans., 368.	imidocarbonate, action of, on
diamidopyromellitate, 257 diamidoquinonedicarboxylate, 727.	aromatic o-compounds, 135.
dibenzylmalonate, 952.	indoledicarboxylate, 150. isoamyl ether, a-chlor-, 231.
- dibromosuccinate, action of aniline	isobutyl ether, 1088.
on, 1046.	isonitrosobutyroacetate, 717.
dicarbontetracarboxylate, 916.	
dichloracetoacetate, action of po-	isopropylisovalerylacetate, 1099. itaconate, magnetic rotation of,
tassium cyanide on, TRANS., 289.	Proc., 99.
dichloronicotinate, 158.	ketipate, 362.
dichlorophthalate, 832.	— maleate, magnetic rotation of,
B-dichloropropionate, 913.	Рвос., 99.
dichloroquinonedicarboxylate, 727.	— malonate, action of ethyl iodide
diethylsulphonebutyrate, 123.	and zinc on, 360.
— m-α-dihydroxymethylcoumarilate,	action of zinc alkyl com-
263. —— diiodosuccinamate, 34.	pounds on, 261.
p-diketohexamethylenetetracarb-	addition of, to compounds containing doubly linked carbon-
oxylate, 257.	atoms, 800.
dimethamidobenzene-azophenyl-	nitrobenzyl-derivatives of,
lutidinedicarboxylate, 1053.	490.
dimethylisobutyrylacetate, 1099.	mesaconate, magnetic rotatory
dimethylpyronecarboxylate, action	power of, Proc., 99.
of phosphoric sulphide on, 920.	— methylcyanacetate, 796.
—— dimethylpyronedicarboxylate, 502.	— methyldehydrohexonecarboxylate,
action of ammonia and of	TRANS., 709.
primary amines on, 500.	action of bromine on, TRANS.,
dimethylpyrroline-anilidocarboxyl-	725.
ate $[2:4:3:5]$, 277.	methyldehydrohexonedicarboxylate, Trans., 739.
dimethylpyrrolinedicarboxylate	methylhexamethylenedicarboxyl-
[2:4:3:5], 276.	ate, Proc., 96.
	, , ,

Ethyl methyllutidonedicarboxylate, 500. methylphenylamidodimethylpyrrolinedicarboxylate, 275. - a-naphthindolecarboxylate, 963. - β -naphtholazophenyllutidinedicarboxylate, 1053. - α-α-naphthylamido-α-cyanopropionate, 261. - α-β-naphthylamido-α-cyanopropionate, 261. $\alpha\text{-}\mathrm{naphthyldimethylpyrrolinedi-}$ carboxylate, 275. p-nitrobenzoylacetate, action of trimethylene bromide on the sodiumderivative of, Trans., 702, 734. - o-nitrobenzoylbenzylmalonate, 952. nitrobenzylethylmalonate, 490. - p-nitromethylcumaril ite, 803. - o-nitrophenyl carbonate, 38. - p-nitrophenyldehydrohexonecarboxylate, TRANS., 735. - o-nitrophenylglycollate, 948. - m-nitrophenyllutidinedicarboxylate, 845. - m-nitrophenyllutidinehydrodicarboxylate, 845. - o-nitrophenyllutidinehydrodicarboxylate, 846. nitrouracilcarboxylate, 128. - orthovanadate, Trans., 752. oxalacetates, 234. - oxalate, action of a mixture of allyl and ethyl iodides and zinc on, - action of ethyl chloracetate and zinc on, 361. - - action of, on acetone, 917. - behaviour of, towards resorcinol, 949. phenylhydrazide, 138. preparation of, 360. - α-oximepropionate, 717. pentacetylgluconate, 127. pentamethylenedicarboxylate, TRANS., 244. - pentane- $\omega_2\omega_2$ -tetracarboxylate, TRANS., 241. - perthiocarbonate, 1030. - phenaceturate, 369. - phenyl carbinol, 35. – bisulphide, 243. phenyldeliydrohexonecarboxylate, TRANS., 727. - m-phenylene-α-dimethyldiphenyldipyrroline- β -dicarboxylate, 274. phenyloxalacetate, 587. - phthalate chloride and its decomposition with ethyl sodomalonate, phthalylacetoacetate and itsphenylhydrazine-derivative, 144. piperidyloxamate, 385.

VOL. LII.

Ethyl potassiocyanacetoacetate, TRANS. 287.– propiomalonate, 717. propiopropionate, 717. constitution of, 915. – pyrovanadate, Trans., 754. - quinoltetracarboxylate, 257. - quinone-p-dicarboxylate, 727. - racemate, magnetic rotation of, TRANS., 364. - sodacetoacetate, action of, on the ethyl salts of unsaturated acids, 672. reaction of, with benzaldehyde, &c., 716. - reaction of, with phenylisocyanate, 716. - reaction of, with thiocarbimides, 716. - sodiomalonate, action of iodine on derivatives of, 916. - -- action of, on the ethyl salts of unsaturated acids, 672. - --- action of triphenylmethyl bromide on, Trans., 224. — reactions of, 716. succinimidoacetate, 1031. o-sulphammebenzo ite, 835. - sulphides, chlorinated, physiological action of, 857. - tartrate, magnetic rotation of, TRANS., 363. — tetrachlorobenzoate, 1046. – tetrachlorodiketoadipate, 727. - tetrahydronaphthalenetetracarboxylate, Proc., 93. tetramethylenecarboxylate, Trans., 12. tetramethylenedicarboxylate, TRANS., 2, 23. thiodimethylpyronedicarboxylate, thiomethyluracilacetate, 128. thiophenyllutidinedicarboxylate, 920. a-o-toluido-a-cyanopropionate, 260. – α-p-toluido-α-cyanopropionate, 261. o-toluidoisosuccinamate, 260. toluylenedimethylpyrrolinedicarboxylate, 276. - trimesate, 492. - synthesis of, 587. trimethylenecarbanilate, 578. — triphenylcarbinylmalonate, 671. - triphenylmethylmalonate, TRANS., 225. - β-triphenylpropionate, Trans.. 227. vinaconate, constitution of, 468. Ethylacetotoluide, m-nitro-p-, 938. Ethylacetylacetone, 653. Ethylamidoresorcinol, 661. Ethylamine vanadate, 899. Ethylanhydracetonebenzil, Trans., 432. 4 n

1216 Ethylanhydroecgonine and its derivatives, 741. Ethylaniline, condensation of, with aldehydes, 577. - 1 : 4 nitroso-, 244. Ethylbenzamide, 358. Ethylbenzene, action of chlorine on, in sunlight, 807. action of heat on the vapour of, 572. Ethylbenzoylecgonine, 1126. Ethylbismuthine iodide, 803. Ethylborneol, 596. Ethylbutylacetaldehyde, 794. a-Ethylcinchonic acid, 504. Ethylcyanacetamide, 796. Ethyldichlorisoquinoline, 1113. Ethylene, action of heat on, 226. and benzene, action of heat on the mixed vapours of, 572. - and naphthalene, action of heat on the vapour of, 572. - and toluene, action of heat on the mixed vapours of, 572. bromide, action of, on alkylmetallic oxides, 544. - action of, on the sodiumderivatives of ethyl acetoacetate, benzovlacetate, and acetonedicarboxylate, Trans., 820. cyanide, action of aniline hydrochloride on, 931. diketones, aromatic, 827. – diphenylcarbamide, 578. grouping, refractive equivalent of, 193. solidification of, 634. —— thiobenzenesulphonates, 953. - thio-p-toluenesulphonate, 954. Ethylenedi-β-amido-α-crotonic acid, 494. Ethylenediamine, action of, on catechol, 722.condensation-derivatives of, 493. Ethylenedibenzoyl-o-carboxylic action of amines on, 735. Ethylenedicarbanilic chloride, 578. Ethylenediphenyldiamine, action of carbonyl chloride on, 577. Ethylenediphthalimide, 1037. Fthyleneditolyldiamine, 788. Ethylene-o-phenylenediamine and its derivatives, 722. Ethylene-a-tetramethyldipyrroline, 273. Ethylethenyldiamidotoluene, 817 a-Ethylhomo-o-phthalimide, 1113. a-Ethylhomo-o-phthalonitrile, 1112. Ethylhydroxyquinoline, chlor-, 738. Ethylhydroxytoluquinoline, chlor-, 738.

Ethylidene glycol, trichloro-, TRANS.,

Ethylideneanilide, anilido-, 813.

Ethylidenediethylsulphone, 123.

Ethylidene-\(\beta\)-dinaphthyl oxide, 271. Ethylidenedinaphthylacetal, 271. Ethylidenediphenol, 231. Ethylidenediphenylsulphone, 123. Ethylidenediureïde, trichlor-, 1032. Ethylidene- β -naphthylhydrazine, 153. Ethylidene-m-pyrazoline, 1032. Ethylidene-p-toluide, monochloro-, 813. Ethylmethylhydroxybromopyrimidine, 1054.Ethylmethylketole, 976. β-Ethylnaphthalene, α-nitroso-, 1114. Ethylnitraniline (meta-), action of diazotised nitranilines on, TRANS., 111. (para-), action of diazotised nitranilines on, TRANS., 110, 111. Ethyl-orange, 666. Ethyl-p-phenylenediamine, 244. Ethylphenylthiocarbamine ehloride, 822. oxide, 822. Ethylphthalimide, brong., 1037. a-Ethylpiperidine, 740. specific rotation of, 283. Ethylpiperidines, a- and y-, 65. a-Ethyl-\beta-propylacraldehyde, 794. Ethylpropylaniline and its derivatives, 134. Ethylpyridines, α - and γ -, 60. Ethylpyrrolinedibenzoic acid, 736. a-Fthylquinoline, 504. Ethylquinolines, a- and y-, and their derivatives, 279. γ -Ethylquinolinesulphonic acid, 280. Ethylsulphonic acid, preparation and amides of, 468. Ethylsulphono-mono-and di-ethylamide, Ethylsulphono-mono- and di-methylamide, 469. Ethyltoluene (ortho-), bromo-, 240. nitro- and dinitro-, 240. oxidation of, 240. Ethyltoluene-β-sulphonic acid (ortho-) and chloride, 240. Ethyl-o-toluidine, p-nitroso-, 244. eta-Ethylthiophen, 237. Ethyltrihydrohydroxyquinolinecarboxylic acid, 1120. Ethylxylenes, o- and m-, and their sulphonic derivatives, 37. Euphorbiaceæ, milky juice of certain, 72. Euphorbium, analysis of, 73. Euphorbone, 72 Eurhodines, 153. Euxanthic acid, formation of, from euxanthone, in the animal organism, Euxanthone, 498. - group, 152. Evaporation and capillarity, relation

between the theories of, 323.

Ethylidenedi-a-naphthol, 231.

Evaporation and dissociation, TRANS., 755.

Expansion, cooling of carbonic anhydride on, 880.

Explosives, analysis of, 86.

F.

Fæces, analysis of nitrogenous metabolites in, 613.

Fast red, description and measurement of the spectrum of, TRANS., 197.

Fat, estimation of, 402.

—— formation of, in the dog from carbohydrates, 288.

in milk, determination of, 308, 1144.

power of the liver to form sugar from, 67.

Fats, analysis of, 621.

—— new method of analysis for, 620.

—— saponifiable, separation of mineral

oils from, 1001.

Fatty acids, C₂H₄O₂—C₅H₁₀O₂, boiling points of, 207.

paring, 358.

determination of, in soap, 307.

Fehling's solution, titration with, 185.

Fellic acid, 606.

Felspar, ground, as a potash manure, 996.

- in the Corsican diorite, 784.

—— phosphoric anhydride in, 347.

sodium, from Krageroe, Norway, 453.

Felspars from Elba, 560.

Fergusonite, earths and niobic acid from, 706.

Ferment, nitric, distribution of, and its function in the disintegration of rocks, 1135.

---- organisms in the alimentary canal, 288.

Fermentation, alcoholic, of dextrin and starch, 171.

---- of milk-sugar, 1090.

----- reduction of copper sulphate during, 171.

- and zymotic virus, 292.

--- butyric, morphology of, 1135.

---- by protoplasm from recently killed animals, 984.

- effects of thiocyanates on, 519.

--- methane, of acetic acid, 1135.

—— of cellulose, 1131.

— panary, bacillus of, 70.

Fermentations, secondary, method of preventing, 171.

Fermented liquids, estimation of glycerol in, 1142.

Ferments, digestive, relation of proteïds to, 1129.

Ferric chloride as an exciting agent for voltaic batteries, 413.

——— cell, modification of, 1071.

chloride on, 330. Ferricyanides, new class of, 649.

Ferricyanides, new class of, 649.

Fibrin, digestion of, by trypsin, 1130.

Filters with greased edge, 295.

Fish and meat, comparative absorption of, in the alimentary canal, 1130.

Flesh, blood and liver, composition of, under varying conditions, 855.

Flour, detection of alum in, 530.

Fluorazein, 737.

Fluorescein, dichloro-, 832.

— tetrachloro-, 833. — tetriododichloro-, 832.

Fluorescence of bismuth-compounds, 4.

of manganese and bismuth, 189,

873.

of manganese compounds under the influence of the silent discharge,

— of spinel, 1005.

— red, of alumina, 191, 538, 625. Fluorescences of manganese and bismuth,

- with well-defined spectra, 1008.

Fluorine, atomic weight of, 892.

— estimation of, 295.

volumetric method of estimating,

Fluorspar from Vesuvius, 18.

Food stuffs, action of micro-organisms from the mouth and from fæces on, 1059.

Formamides, substituted, action of phosphoric chloride on, 384.

Formanilide, p-nitro-, 250.

Formates in the organism, 513.

Formic acid, estimation of, in water, 1000.

from, 751.

Formopiperidide, 385. Formose, 459.

Formotoluide (meta-) and its derivatives, 935.

Franklinite, artificial formation of 557.

Freezing point, alteration of, 879. Fuchsia ovata, chlorophyll in, 1117. Fuchsite from Canada, 782.

Fumaramic acid, 34.

Fumaranilic acid, 934. Fumaric acid, constitution of, 916. conversion of, into asparagine, 1100. conversion of, into aspartic acid, 917, 1110. heat of neutralisation of, 205. --- dianilide, 934. Fungi, fluorescence of pigments of, 314.Furfuracryl-glycocine, 1033. Furfuracryluric acid, 1033. Furfuraldehyde, 571. action of quinaldine on, 976. - behaviour of, in the animal organism, 1032. Furfuran, β-bromo-, 658. —— constitution of, 470. — derivatives, 803. ---- from phloroglucinol, 262. -- from resorcinol, 262 - transformation of, into pyrroline, 470. Furfurylamine, 568. - and its salts, 470. Furnace, Cowle's electrical, products from, 551. Ga, $G\beta$, evidence as to nature of, 1069. Gadenium, 107. Gadolinite and samarskite, new elements in, 334. Gadolinium oxide, equivalent of, 109. γ-Galactan, 652. Galactose, formation of, from raffinose, 791.- from Carragheen moss, 791. — phenylhydrazine, 567. — properties of, 652. Galenobismuthite, containing selenium, from Falun, 343. Galleïn, tetrachloro-, 833. Gallium, 1081. as a halogen carrier, 326. - chromiferous, red fluorescence of, oxide, fluorescence of, 409 Galloflavin and its derivatives, 1107. Galvanic cell, standard, 541. – element, 541. --- elements, 757. - polarisation of aluminium, 415. produced by feeble electromotive forces, 317, 541. Gamsigradite, 351. Garnet, pseudomorphs of, 117. Gas analysis, apparatus for, 179. - source of error in, 1062. hydride condensed on its surface, 13. apparatus, 1137.

Gas burette, 687, 1062. coal-, estimation of hydrogen sulphide, carbonic anhydride, and cyanogen in, 86. estimation of sulphur and impurities in, 297. compressed, products from the residues of, 787. demonstration of the coefficient of expansion of, as a lecture experiment, 1013. generator-, and water-, composition of, 1078. generator, constant, 634. Gas-coal, analysis of, 84. Gaseous and liquid states of matter, representation of the connection between, by isopyknics, 432. Gases, absorption of, by carbon, TRANS., 249. electrical conductivity of, 4. hot, electrical conductivity of, 1071. - of parotid saliva, 287. preservation of, over mercury, 105. relation of the conductive capacity of, to temperature, 5. spectra of, at low temperatures, 1066 Gasometric assaying, comparative, 80. Gastric juice, free hydrochloric acid in, Gearksutite from Ivigtut, Greenland, Gelatin, absorption spectrum of, TRANS., Gelseminine, 981. Gelseminum root, alkaloïds of, 981. Generator-gas, composition of, 1078. Germaniofluoric acid, 1083. Germanium, 1081. and its compounds, physical constants of, 778. bromide, 1082. chloroform, 1082. - ethide, 1083. - extraction of, from its ores, 1082. – fluorides, 1083. - oxychloride, 1082. preparation of, 1082. - spectrum of, 313. – ultramarine, 1083. --- volatility of, 445. Germination, changes in the proteïds of seeds during, 987. influence of ozone on, 516. - loss of nitrogen by plants during, Glass, cracking, with certainty, 105. decomposition of, by carbonic an-

Gold, 450, 778.

Glaucophane, 1086. from Brittany, 784. Globulin, separation of, from albumin in urine, 406. Globulins, vegetable, 507. Glow, residual, examination of, 1066. Glucina, phosphorescence of, 1067. Gluco-o-diamidobenzene, 931. Gluco-γ-diamidobenzoic acid, 931. Gluco-m-p-diamidotoluene, 931. Gluconic acid, 468. · acids, 127. Glucosamine tetrabenzoate, 229. absorption of, Glucose, spectrum TRANS., 59. and the saccharification of starch, 354. detection of, in wines, 692. heat of combustion of, 761. - relation between the destruction of, and the production of animal heat and work, 289. Glucoses, action of dilute acids on, 229. Glutaconic acid, \(\beta\)-chloro-, 467. Glutazine and its derivatives, 155. Gluten, wheaten, as a food, 511. Gutic acid, 467. Glyceraldehyde, 794. Glyceric acid, heat of neutralisation of, Glycerol, action of Bacterium aceti on, Trans., 639. ---- action of, in diabetes, 985. ---- dibenzoate, 229. ---- estimation of, 1142, 1143. --- estimation of, in wine, 86, 184. ---- estimation of, in wine or beer, 306. - non-volatility of, with aqueous vapour, 1143. - nutritive value of, 509. — oxidation of, 651. quantitative estimation of, 750. Glyceroxides, alcoholates of, 426, 427. Glycocholic acid, preparation of, 390. Glycocine pyromucate, 1032. Glycogen and its distribution in the organism, 1127. importance of ammonia in the formation of, in the liver, 68. in the liver of new-born dogs, 167. Glycol, action of Bacterium aceti on, Trans., 638. Glycoluril, constitution of, 34. Glycosine, constitution of, Trans., 552. Glycosuric acid, 1047. Glycuronic acid, 235, 498, 717. - anhydride, 718. Glyoxal-cenanthyline and its derivatives,

Glyoxylic acids of the thiophen series,

804.

--- assay of, in bar copper, 81. - atomic weight of, 340, 1019; Trans., 565, 866. — bismuthic, 707. - Chaldean, 443. — compounds of, with nitrogen, 112.
— estimation of minute quantities of, 184. - from Burmah, 221. — from Da...

fulminating, 112. — native, from Thibet, 780. - natural solutions of, 555. --- oxides, 15. - preparation of pure, 554. - purple oxide of, non-existence of, 16. separation of, from other metals, 555. - separation of, from the platinum metals, 1084. — spark spectrum of, 555. sulphides, 1019. - superoxide, non-existence of, 16. See also Aurous and Auric. Goslarite from Montana, 346. Grain, spectroscopic notes on the carbohydrates andalbuminoids from, TRANS., 58. Grangesite, 351. Grape-sugar, action of sulphuric acid on, 125. Grapes, detection and estimation of aluminium in, 690. - formation of sugar in, 517. organic and inorganic constituents of, 860. Graphite, celestial, 351. - from Ceylon, 901. - New Zealand, 555. Graphitoïd, 341. Griqualandite, 709. Growth, loss of nitrogen by plants, during, 292. Guaiacum resin, distinguishing purified from natural, 752. Guanidine cyanurate, 358. Guanine, colour reaction of, 280. Guano, Australian bat, and minerals therein, 708. Guanylcarbamide salts, 358. - synthesis of, 357. Gum, animal, 26. Gums, colour reactions of, 534. Gun-cotton, regeneration of acid residues in the manufacture of, 770. – —— sodium nitrate in, 715. Gypsum, solubility of, in solutions of ammonium salts, 333.

H.

Hæmatin, action of reducing agents on, 1127.

compound of, with nitric oxide, 854.

of, in pathological urine, 1127.

Hæmatoporphyrin, 1127.

—— in molluses, 613.

Hæmatoporphyroïdin, 1127.

Hæmatoscope, 312.

Hæmatoscopy, a new method of blood analysis, 312.

Hæmatostilbite from Örebo, 645.

Hæmidin crystals, 408.

Hæmin crystals, 165.

Hæmoglobin, amount of oxygen taken up in the decomposition of, into albumin and hæmatin, 854.

Halogen carriers, 130, 326.

in the natural groups of the elements, 806.

Halogens, hydrides of, action of light on, in the presence of oxygen, TRANS., 801. Hannayite, 709.

Harpenden, well waters of, TRANS., 520.

Hay, meadow, iron sulphate as a manure for, TRANS., 215.

Heat and solar radiation, comparative action of, 411.

- animal, relation of the production of, to the destruction of glucose, 289.

— development of, when powders are moistened, 9.

equivalents of benzoyl-compounds,

influence of, on the decomposition of oxalic acid by ferric chloride, 324.

- latent, of vaporisation of certain volatile substances, 627.

- of combustion of ethyl ether, 425.
of conversion of the benzene to

the acetic series, 1011.

of dissolution of anhydrous sodium

carbonate, TRANS., 73.

of salts, influence of tem-

perature on, Trans., 290.

---- of salts in water, influence of temperature on, Proc., 66.

of evaporation of homologous carbon-compounds, 9.

— of formation of crystallised tellurides, 1010.

320. of potassium glyceroxide,

Heat of formation of sodium alkyl oxides, 319.

of tartar emetic, 544.

of hydration of salts, Trans., 75.
 of neutralisation of meconic and mellitic acids, 206.

- of oscillation, 419.

— of solution, variation of solubility with variations in, 548, 632.

Heats of combustion and formation of homologous phenols, 98.

quinic acid, 1011.

of organic compounds, 95,

of organic compounds determined by different methods, values of, 1011.

of formation of potassium methoxide and ethoxide, 204.

—— of neutralisation of glyceric, camphoric, malic, and citric acids, 205. —— of homologous and isomeric

acids, 95.

of malonic, tartronic, and

malic acids, 96.

specific, and changes of states at

high temperatures, 201. Helianthin, description and measurement of the spectrum of, Trans.,

192.

Hemellithene and its bromo- and nitro-

derivatives, 36.
—— synthesis of, 659.

Hemellithenol, 36.

Hemellithylic acid, 36.

Hemialbumose, 1127.

Hemipinethylimide, 46.

Hemipinic acid, nitro-, 46.
—— anhydride, nitro-, 49.

Hemipinimide, 46.

--- isomeride of, 258.

Hemipinimidine, 585.

Hemipinphenylhydrazide, amido-, 45.

Hemp-seed oil, acid from, 799.

Hentriacontane from beeswax, 124.

Heptacosane from beeswax, 124. Heptamethylene-derivatives, attempted

synthesis of, Proc., 96.

Heptine, action of heat on, 565.

Heptylbenzene, 253.

---- amido-, 816.

—— nitro-, 815. Herderite, 19,

— remarkable crystal of, 117.

Hesperidin, sugar from, 715. Hesperisium, 107.

Heteroalbumose, 285.

Heterovitellose, 286.

Heteroxanthine in urine, 740.

Heulandite, 903.

- occurrence of strontia in, 453.

Hexadecylbenzene and its derivatives, 252.

Hexadecylphenol, 252.

Hexahydroterephthalic acid and its dibromo-derivative, 370.

Hexahydro-xylene from Caucasian petroleum, 922.

Hexamethylanthracene, 1102.

Hexamethylbenzene, 1101.

Hexamethylene-derivatives, synthesis of, Proc., 96.

Hexamethyltriamidotriphenylmethane, 1039.

Hexazoxybenzene, 479, 664.

Hexine, 565.

Hexyl alcohol, dextrorotatory, from essence of chamomile, 228.

 dimethamidophenyl ketone, 253. -- phenyl ketone, 253, 816.

Hexyldiphenylmethane and its derivatives, 253.

Hexylene glycol, Trans., 722.

Hexyltetramethyldiamidodiphenylmethane, 253.

Hippuric acid, compound of, with pyruvic acid, 44.

 determination of, in urine, 535, 1001.

— relation of tyrosine to, 1133. Hofmann's violet, description measurement of the spectrum of, Trans., 171.

Holcus sorgho, grain of, 519.

Homo-o-phthalaminic acid, 726.

Homo-o-phthalbenzylimide, 1111.

Homo-o-phthalethylimido - azobenzene, 1111.

Homo-o-phthalide, 50.

Homo-o-phthalimido-azobenzene, 726.

Homo-o-phthalimide, 725, 1111, 1112. Homo-o-phthalomethylimide, 51.

Homopterocarpin from sandal wood, 971. Hoofs, analysis of, 408.

Hop substitutes, detection of, in beer, 1146.

Hornblende from Porthalla Cove, Cornwall, 1022.

Horns, analysis of, 408.

Horse, absorption in the stomach of, 743.

digestion and digestive secretions in, 744.

 intestinal digestion in the, 610. Humous substances, formation and composition of, 229.

Hydrargyrine, 676.

Hydrastine, 174, 383, 505.

- and its derivatives, 1057.

Hydrastinic acid, 384.

Hydrastinine and its derivatives, 383.

Hydrastis Canadensis, substances contained in the root of, 174.

Hydrazimido-compounds, 731. Hydrazine, 715.

(diamidogen) sulphate, 715.

Hydrazinebenzenesulphonic acids, 933. Hydrazinebenzopyruvic acid, 150.

Hydrazines, 932.

· secondary, unsymmetrical, 1104. Hydrazinetoluenesulphonic acids, action of concentrated sulphuric acid on, 146.

Hydrazobenzene, bromo-, 479.

– dibromo-, 479.

halogen-derivatives of, 478.

Hydrazocamphenes, action of hydrogen on, 675.

Hydrazodimethylquinol, 364.

Hydrazotoluene, p-bromo-, 479.

Hydrindonaphthene-derivatives, Proc.,

Hydrindonaphthenecarboxylic acid, Proc., 93.

Hydrindonaphthenedicarboxylic acid, Рвос., 93.

Hydriodic acid, action of, on zinc containing lead, 1076.

Hydroacridylacrylic acid, 850.

Hydroanemonin, 843. Hydrobenzamidetricarboxylic acid, 951.

Hydrobromic acid, action of, on zinc containing lead, 1076.

 new hydrate of HBr, H₂O, 631,

- — the hydrate, $HBr, 2H_2O$, 630. - — thermal study of solutions of the solid hydrate, HBr, 2H₂O, 628.

Hydrobromocinchine, 1124.

Hydrobromocinchonine, 1124. Hydrobromodehydrocinchonine, 1125.

Hydrobromoquinine, 1123. Hydrobromostannic acid, 554.

Hydrocarbons, detection of certain, in alcohols, 1088.

from tar-oils boiling between 170° and 200°, 35.

Hydrocarrotene, 265.

Hydrochloric acid, action of, on zinc containing lead, 1075.

- electrolysis of: a lecture experiment, 633.

· free, in the gastric juice, 287.

Hydrochlorocinchonine, 1124.

Hydrochloroquinine, 1123.

Hydrochlorostannic acid, 554. Hydrocoumaric acid, Trans., 70.

Hydrocoumarin, Trans., 71.

Hydrocyanic acid, estimation of, 1143. - poisoning by, 392.

Hydrodicoumaric acid and its salts, Trans., 65.

Hydrodicoumarin, Trans., 66.

bromo-, Trans., 67.

Hydrogen, apparatus for estimating, in presence of methane, 618. --- bromide, action of light on, in presence of oxygen, TRANS., 804. chemical structure of, and dissociation in the sun's atmosphere, 1070.

— chloride, action of light on, in presence of oxygen, Trans., 801. - influence of liquid water in promoting the interaction between oxygen, &c., in presence of light, Trans., 806. - origin of, in the gases of volcanoes, 643. combustion of weighed amounts of, 1078. comparison of the equivalent of zinc with that of, Trans., 854.

— iodide, action of light on, in presence of oxygen, Trans., 805. peroxide, estimation of, 862. presence of, in saliva, 298. — fest for, 296. — phosphide, hydroxylated solid, 635. - reduction of inorganic thio-salts by, 111. - refractive index of, 193. sulphide, estimation of, in coal-gas, - --- poisoning by, 392. preparation of, free from arsenic, 885. - - purification of, from hydrogen arsenide, 885. Hydrogiobertite, 17. Hydrohydrastinine, 384. derivatives of, 1057. Hydromethylamidophenol, 135. Hydro-m-methylcinnamic acid, 724. Hydromethylindole, 957. Hydromethylketole, 957. Hydromethyl- β -naphthindole, 154. a-Hydronaphthindole, 964. Hydroskatole and its derivatives, 957. Hydrothiocinnamic acid, amido-, 1109. derivatives of, 1108. - nitro-, 1109. Hydroxyamidopyridine, trichloro-, 156. Hydroxyanthraquinone dyes, 593. spectra of methyl derivatives of, 1. Hydroxyazo-compounds, 819. Hydroxyazophenine, 1105.
Hydroxybenzoic acids, m- and p-, action of phosphoric chloride on, 947. Hydroxybenzyl alcohol (para-), 38. Hydroxybromophenylpyrazoline, 933. Hydroxybutyric acid, chloro-, constitution of, 30. $-\beta$ -, in diabetic urine, 290, 464, 857. - β -, lævorotatory, in the blood of a diabetic patient, 986.

Hydroxydehydracetic acid and its acetyl compound, Trans., 491, 492. Hydroxydimethylpyrrolinecarboxylic acid, 275. Hydroxydıquinolyl, 848. Hydroxyethyltolucarbostyril, 738. Hydroxyhemellithylic acid, 36. Hydroxyhydrastinine and its derivatives, Hydroxyindonaphthenecarboxylic acid, Hydroxyisopropylsalicylic acid (para-), Hydroxyl group, reagent for, 124. quantitative estimation of, 749. Hydroxylamine, benzyl-derivatives of, 246. formation of, from silver, mercury and sodium nitrites, TRANS., 661. - reaction of, with ferrous hydroxide and water, Trans., 655. - titration of, by iodine, effects of dilution and the presence of sodium salts and carbonic anhydride on, Trans., 794. Hydroxylamines, aromatic, 663. Hydroxylepidine, 159. reduction of, 278. Hydroxymethenylamidophenol, 245. Hydroxymethenyltoluylenediamine, Hydroxy-o-methoxycinnamic acid (meta-), 140. Hydroxymethylcoumarone, 262. Hydroxynaphthaquinone, 674. a-Hydroxynaphthoic acid, action of phosphoric chloride on, 963. Hydroxynaphthyl sulphide, 808. ζ-Hydroxynitrobenzoic acid, 485. Hydroxynitrobenzoic acids, meta- and para-, 485. Hydroxyphenyl sulphide, 807. Hydroxyphenyllutidine (meta-), 1053. Hydroxyphenyl-p-methoxyhydroquinoline (a-meta-), 979. $\mathbf{Hydroxyphenyl}$ -p-methoxyquinoline (α-meta-), 978. Hydroxyphenylpyrazoline, 933. Hydroxy-α-phenylquinoline (para-), 847. Hydroxypicolinic acid, chloro-, 158. α - and β -Hydroxypiperic acids, oxidation Hydroxypiperohydrolactone, 488. a-Hydroxypropylpyrroline, ω-trichloro-, Hydroxypyridine, di-iodo-, 845. γ-Hydroxyquinaldine, 847. and its derivatives, 679. Hydroxyquinolinecarboxylic acid (ortho-), 1119. and its derivatives, 738.

Hydroxycoumarilic acid (meta-), 262.

Hydroxyquinolinecarboxylic acid, para-, 1120. and its derivatives, 63.
synthesis of, 1119. α-Hydroxyquinolinesulphonic acid, 379. Hydroxystearic acids of different origin, - anhydride, 31. Hydroxythiotoluene, 473. Hydroxytoluic acid, 669. Hydroxyuracil, nitrobromo., 920. Hydroxyvaleric acid, 717. Hydroxyxanthine, 919. Hydrozincite, 1021. Hygrine, separation of, from cocaine, 1126.β-Hyoglycocholic acid, 742. Hypomelanin, 168. Hyponitrites, formation of, Trans., 646, Proc., 119, 121. Hypoxanthine in urine, 739. I. Ice, calorimeter, Bunsen's, 1073. refractive index of, 753. Idrialine from Idria, 1021. Ignatieffite, a new variety of alumnite, 1085. Illicium religiosum, subtsances from, 497. Indian-yellow, 498. Indigo-blue, formation of, from o-nitrophenylpropiolic acid by means of potassium cyanide, 672. - dyes on fabrics, testing, 1147. estimation of, 1147. estimation of, in textile fabrics, 871. fermentation, microbe of, 1061. Indium as a halogen carrier, 326. Indole-derivatives, constitution of, 148. — methylation of, 588. — synthesis of, 148. from dichlorether and aniline, 836. - intermediate products in the formation of, from dichlorether and aromatic amines, 813. - methylation of, 976. - transformation of homologues of, into quinoline homologues, 1113. Indoles, 956. - from m-hydrazinebenzoic acid, 149. from methylphenylhydrazine, 149. — from α-naphthylhydrazine, 963. from β-naphthylhydrazine, 153. – from phenylhydrazine, 149. ---- from tolylhydrazine, 956. Indonaphthalene-derivatives, conversion of β -naphthaquinone into, 728. synthesis of, 729, 836. --- ketone, 728. Induline, 821.

Indulines, 1105.

Inosite, 355. - acetyl compound of, 1090. - and dambose, identity of, 909. — derivatives, 908. - formation of, 1089. - heats of combustion and formation of, 1011. - hexacetin, 908. – hexabenzoïn, 908. - hexanitrin, 908. reduction and oxidation of, 459. Integral weights in chemistry, 1077. Invertase, absorption spectrum of, Trans., 60. Invertin, action of, 166. Iodates and sulphates, precipitation of mixtures of, by barium salts, 884. Iodic anhydride, combination of, with sulphuric anhydride, 328. Iodides, decomposition of, by the stomach, 508. Iodine, bromine, and chlorine, improved form of apparatus for the separation of, TRANS., 690. indirect determination by electrolysis of their silver salts, 525. – carrier, sulphuric acid as, 573. detection in Laminaria, 996. - free, occurrence of, in a mineral water, 221. liberation of, from hydrogen iodide by the action of light in presence of oxygen, Trans., 805. occurrence of, in phosphorites, 222. origin of, in the gases of volcanoes, 643. — oxyacids of, 327. refractive equivalent of, 193. - solutions, new method of standardising, 618. - trichloride, action of hypochlorous anhydride on, 106. - vapour, dissociation of, by the electric discharge, 1013. volumetric estimation of, 862. Iodine-green, description and measurement of the spectrum of, Trans., 174. Iodoform, 787. Iodometric studies, 688, 997. Ipecacuanha, estimation of, 1147. Iridium and tin, alloy of, 779. Irisin, 26. Iron, action of ammonia on, at a red heat, 702. - action of ferric sulphate on, 703. cast, influence of silicon on the condition of carbon in, 220. - copper, and platinum, alloys of, 778. - determination of combined carbon in, 866.

determination of phosphorus in,

299, 396, 527.

Iron, direct separation of manganese from, 183.

- Eggertz's method of estimating sulphur in, 296.

 estimation of sulphur in, 1141. --- estimation of silicon in, 527,

1140. influence of silicon on the properties of, Trans., 129.

- influence of silicon on the mechanical properties of, Trans., 141.

— manganese in, 619.

- metallic, determination of, in slags, 1140.

— nitride, 702.

--- oxide, estimation of, in mineral phosphates and manures, 302.

- pig-, effect of silica on the estimation of manganese in, 183.

 estimation of phosphorus in, 183.

- titanium carbide in, 703.

– potassium fluoride, 448.

precipitation of nickel in presence of, 1141.

- pyrites, assay of, for sulphur available for sulphuric acid manufacture,

- rapid estimation of phosphorus in, 865.

· rapid estimation of silicon, sulphur, and manganese in, 1140.

- separation of nickel and cobalt from, 1141.

separation of zinc from, 182.

- specially pure, silicon in, TRANS.,

- sulphate, agricultural experiments with, Trans., 215.

– telluride (emmonsite), 344.

Isethionic acid in the body, and thiosulphuric acid in the urine, 68. Isoamylamine, preparation of, 652.

Isoamylphenylamine, 721.

a-Isoamylphenylhydrazine, 1104.

a-Isoaspartic acid, 801.

Isobenzal, chloro-, phthalimidine, 62. Isobutaldehyde, action of quinaldine on, 975. and acetaldehyde, action of aniline

on a mixture of, 974. -- and its polymeric modification,

461.

and methylal, condensation of, with aniline, 957.

Isobutane, tribromo-, 712.

Isobutenyldiamidotoluene, 817.

Isobutylamines, mono-, and di-, separation of, by means of ethyl oxalate, 357.

- preparation of, 356. Isobutylbenzoylecgonine, 1126. a-Isobutyleinchonic acid, 504. Isobutylene, action of bromine on,

Isobutylisobutenyldiamidotoluene, 817. Isobutylphenylamine, 721.

a-Isobutylphenylhydrazine, 1104.

Isobutyl-m-pyrazole, 1055.

α-Isobutylquinoline, 504. Isobutyronitrilecarbamide, 1055.

Isobutyrothienonesulphonic acid, 141.

Isobutyrylacetophenone, 943.

Isocarvoxime, 923.

Isochoric lines, Trans., 773.

Isocinchonine, 1124.

Isocrotonic acid, a-chloro-, 655. Isocymenesulphonic acid, (a-meta-), action of bromine and water on, 147.

- α-bromo-, 147.

Isodulcitol, 906.

— oxidation of, 652.

tetracetate, 907.

--- trinitrate, 907. Isohæmatoporphyrin, 1127.

Isomerism of position, 420.

Isonitroso-compounds, 466, 1103.

- --- intramolecular changes of, when treated with sulphuric acid, 826.

Isonitrosodiacetone nitrate, 563. Isophotosantonic acid, 57.

Isopropyl chlorocarbonate, 1028. — formamide, 1028.

---- formonaphthylamide, 1028.

- phenylformamide, 1028. Isopropylacetylpyrroline and its derivatives, 598.

Isopropylamide of isobutyric acid, TRANS., 688.

a-Isopropyleinchonic acid, 504. Isopropylene, a-chloro-, 656.

a-Isopropyl-B-isobutylhydracrylic acid, 1100.

a-Isopropylphenylhydrazine, 1104. a-Isopropylpiperidine, 740.

Isopropylpiperidines, α - and γ -, 65.

Isopropylpyridines, α - and γ -, 60.

Isopropylpyrroline, 598. a-Isopropylquinoline, 504.

Isophthalaldehyde, 940.

Isophthalaldoxime, 482.

Isopyknics, 432.

Isoquinoline and its derivatives, 61, 505.

- chloro-, 62.

--- dichloro-, 61. - homologues of, 739, 1112.

– methiodide, 63.

— red, 380. Isosuccinic acid, a-amido-, 801. Itacolumite, flexibility of, 21.

Itaconic acid, heat of neutralisation of,

of,

J.

Jalapin, physiological action of, 291. Jequirity, the proteïds of the seeds of,

Juglone, synthesis of, 674.

K.

Kamala, 272.

- crystalline substance from, 498.

Kersantite from Wüstewaltersdorf, Silesia, 562.

Ketinedicarboxylic acid, 29.

Ketines, 29.

Ketipic acid, 362.

Ketoindonaphthene, dibromo-, 729.

Ketones, action of nitrous acid on,

action of yellow ammonium sulphide on, 1045.

— aromatic, 940.

- action of concentrated sulphuric acid on, 251.

- --- action of hydroxylamine and phenylhydrazine on, 482.

- compounds of, with mercaptans, 126, 462.

- condensation compounds of, with benzil, Trans., 431.

- introduction of acid radicles into, 575, 943.

— nitroso, 463, 944.
— of the acetic series, formation of, 653.

- oxidation of, with potassium ferricyanide, 825.

- synthesis of diatomic monobasic acids from, 717.

Ketonic acids, γ -, constitution of, 126. -synthesis of ethyl salts of, 587.

Kombic acid, 1115.

L.

Lac-dye, composition of, 734.

Laccaic acid, 734.

Lactic acid, detection and estimation of, 307.

- formation of, during muscular activity, and its fate in the organism, 508.

- - in animals, 167.

"Lactocrite," the, 1144.

Lactones, action of phenylhydrazine on,

--- combinations of, with ethereal salts, 952.

Lactotoxine, 389.

Lactucerin, 605.

Lactucol, 606.

Land, cropped, drainage water from,

TRANS., 513. uncultivated, amount of assimilable nitrogen in, 82.

Långbanite, 782.

Lanthana, phosphorescent, sharp line spectrum of, 1070.

Lanthanum sulphate, phosphorescence of, 1067.

Laubanite, a new zeolite, 903.

Laumontite from Striegau, 903.

Law, periodic, 211.

Laws of chemical combination, 99. Lead calcium oxychloride, 446.

carbonate, preparation of, 446.

- chloride, solubility of, in solutions of mercuric chloride, 772.

--- diphenyl diiodide, 573. ---- dinitrate, 573.

--- distribution of, in the brain in cases of lead poisoning, Proc., 71.

— estimation of, in alloys, 304. — microchemical test for, 301.

--- nitrates, basic, 1080.

- oxide, action of, on barium, strontium, calcium, and magnesium chlorides, 446.

-- oxychloride, 446.

- separation of, from mercury and palladium, 302.

- silicate, artificial, from Bonne Terre, Missouri, 109.

- strontium oxychloride, 446. - sulphate, phosphorescence

1068. — tetraphenyl, 572. — tetra-p-tolyl, 573.

Leaves, absorption of carbonic anhydride by, 172.

- action of mercurial vapour on, 395.

— carrotene in, 859.

 decomposition of silicic acid by, 70.

Lecture experiment: continuous flame of nitric oxide and carbon bisulphide,

 demonstration of Avogadro's law, 698.

- of Dulong and Petit's law, 634.

- of the coefficient of expansion of a gas, 1013.

---- electrolysis of hydrochloric acid, 633.

 preparation of potassium ferrate, 769.

- of silicon hydride, 769. synthesis of ammonia, 442.

Leguminous seeds, composition of, 991. Lepidine, bromo- and chloro-, 1113. γ-Lepidine, and its chloro-derivative, 159.Lepidolites of Maine, 347. Leucophenosafranine, constitution Leucosafranine, 250. Levulinic acid, β -bromo-, 464. preparation of, 799. — reactions for, 459.
— salts of, 800. Levulose, formation of, from raffinose, Light, absorption of, by oxyhemoglobin, Ĭ126. action of, on the hydrides of the halogens in presence of oxygen, Trans., 801. white, production of, by mixing the colours of the spectrum, 1. Lime, determination of, in presence of manganese, 865. phosphorescent spectrum of, 1067. Lime-water, sp. gr. of, 700. Limestones, granular, of Stainz in Styria, 780. Limonite-pseudomorphs iron after pyrites, 116. Linoleic acid, 126. ---- oxidation of, 716. Linolenic acid, 913. Linolic acid, 913. Linusic acid, 798. - and its derivatives, 359. Liquid and gaseous states of matter, representation of the connection between, by isopyknics, 432. to the gaseous state of matter, continuous transition from, at all temperatures, 763. Liquids, nature of, 100. - as shown by a study of the thermal properties of stable and dissociable substances, 430.

- solidification of, by pressure, 1013.

specific inductive power of, 413.
thermic expansion of, at various

Lithium and sodium, estimation of, in

----- occurrence of, in psilomelane, 222. ----- salts, poisoning of plants by, 991.

Liver, flesh, and blood, composition of, under varying conditions, 855.

formation of glycogen in the, 68.

- importance of ammonia in the

mixtures of their carbonates, 864.

pressures, 626.

---- carbonate, 1000. ---- solubility of, 699.

--- chromiodate, 777.

— vanadates, 705.

Lithia micas, 347.

Liver of new-born dogs, glycogen in, - power of the, to form sugar from fat, 67. Lobelia, alkaloïds of, 854. Lucasite, a new variety of vermiculite, Lupetidine, a-a-, 64. Lupines, composition of, 518. - feeding value of, 991. Luteocobalt salts, 775. Lutidine, chloro-, and its derivatives, dibromo-, 845. Lutidinecarboxylic acid, 378. Lutidinedicarboxylic acid, chloro-, 501. Lutidines of coal-tar, 499. Lutidone, 500. Lutidonecarboxylic acid, 500. Lutidylquinolyl, 1053.

M. Madder root, Caucasian, examination of, Magnesia, determination of, in presence of manganese, 865. fluorescence of, 409. —— phosphorescence of, 1068. - salts and ammonia, thermochemistry of reactions between, 96. - saturation of arsenic acid by, 204. Magnesium ammonium sulphite, 887. - chloride, solubility in water at 0°, 771. - melting point of, 445. ---- sodium chromate, 111. ---- sulphate, Trans., 682. — sulphite, 886. - vanadates, 339. Magnetic field, variations in the electric resistance of antimony and cobalt in, rotation of chloral, chloral hydrate, and hydrated aldehydes, Trans., 808. - rotatory power of ethyl salts of maleïc and citrasonic acids and their isomerides, Proc., 98. Magnetite, artificial production of, 708. Maıze, silage of, 521. starch, absorption spectrum of, Trans., 59. Malachite-green, preparation of, 580. Malamic acid, 34. Maleic acid, constitution of, 916.

---- conversion of, into aspartic

- --- heat of neutralisation of, 205.

tic acid and asparagine, 1100.

transformation of, into aspar-

acid, 917, 1100.

– dianilide, 934.

```
Maleïnanil, 934.
```

Malëylphenylhydrazine, 671.

Malic acid, heat of neutralisation of, 96,

– diphenylhydrazide, 138. Mallotoxin, 272.

Malonic acid, heat of neutralisation of,

Malt, estimation of acidity of, 87.

Malto-γ-diamidobenzoic acid, 931.

Mandelic acid and its derivatives, preparation of, 948.

- --- o-nitro-, 948.

Manganates, formation of, from permanganates, 552.

Manganese ammonium fluoride, 448, 892.

apatite, 781.

-- benzoate, 582.

- chlorides, 335.

- compounds, fluorescence of, in a vacuum under the influence of the silent discharge, 3.

- determination of, 399, 1139.

dioxide, action of selenious acid in,

direct separation of, from iron, 183.

-effect of, on the phosphorescence of calcium carbonate, 190.

effect of, on the properties of

steel, 639. - effect of silica on the estimation

of, in pig-iron, 183 fluorescence of, 189, 873, 1006.fluoride, 335.

in steel and iron, 619.
metallic, magnetic properties of, 1081.

microchemical test for, 300.

- oxysulphate, 893.

paratungstate, 895.

- potassium fluorides, 336.

-rapid estimation of, in iron and steel, 1140.

sesquioxide, compound of, with cupric oxide, 1081.

– sodium fluoride, 448.

– sulphate, 774.

 sulphide, solubility of, in fused sodium sulphide, 449.

- tetroxide, 1016.

trioxide, 893.
volumetric determination of, 399,

Manganic acid, 894.

- manganous oxide, 1016.

Mangel-wurzel, iron sulphate as manure for, TRANS., 217.

Manure, Chili saltpetre as, 77, 78.

— farmyard-, production of, 175.

— potash-, ground felspar as, 996.

Manures, basic cinder and other finelyground insoluble phosphates as, 995.

chemical, organic nitrogen in, 863.

estimation of iron oxide and alumina in, 302.

- incompatibility of nitrates and superphosphates as, 617.

- valuation of, 174.

Manurial experiments with various phosphates, 1137.

- value of basic steel slag, 176, 525. - of Chili saltpetre and of ammonium sulphate, 77.

Manuring with basic slag and other phosphates, 524.

Marble, influence of temperature on the rapidity of the action of acids on,

Marcasite, recent formation of, 901.

Matter, continuous transition from the liquid to the gaseous state of, at all temperatures, 763.

Meat and fish, comparative absorption of, in the alimentary canal, 1130.

Meconic acid, heat of neutralisation of,

Meconine, action of potassium cyanide on, 586.

 ψ -Meconine and its derivatives, 585.

Meconine-acetic acid, 47.

– – — o-nitro-, 48. Melamines, constitution of, 650.

Melanin, 168, 855. Melitose, 25.

estimation of, 306.

 estimation of, in cane-sugar, 306. Mellitic acid, heat of neutralisation of,

Meniscus angle and capillary constants, 101.

Menthyl phenylamidoformate, 376.

Mercaptan, compounds of aldehydes and ketones with, 126.

Mercaptans, aromatic, o-amidated, 961. compounds of, with aldehydes and ketones, 462.

Mercuric ammonio-chromates, 218.

 chloride, behaviour of, with hydrogen ammonium carbonate, 774.

 solutions, stability of, 774. oxide, action of, on soluble chlor-

ides, 447. Mercurous hydroxide, 447.

Mercury barium oxychloride, 447.

– calcium oxychloride, 447. --- detection of, in organic liquids, 302.

-- expansion of, between 0° and 39°,

microchemical test for, 300.

Mercury, oxychloride, 447. relations of, to other metals, 1080. Methoxylepidine, 159. separation of, from palladium, lead, copper, and bismuth, 302. strontium oxychloride, 447. ---- α-thiobenzoate, 950. Mesaconic acid, constitution of, 917. - --- heat of neutralisation of, 205. Mesityl oxide, compound of phenylhydrazine with, 932. phenyl ketone and its derivatives, 942.Mesitylene, nitro-, oxidation of, 132. - trichloro-, 1101. Metallic oxides, action of sulphur on, in presence of water, 328. Metals, action of nitrogen on, 702. - bivalent, affinity of certain, for tion of, 472. sulphuric acid, 885. - of ancient Chaldea, 443. separation of, by oxalic acid, 529. Metasaccharic acid, double lactone of, Meteoric iron at Fort Duncan, Texas, 647. chloride, 1101. from Augusta Co., Virginia, 454. — from Glorieta Mountain, New Mexico, 120. ----- from Texas, 119. — — the Mazapil, 564. - stones from Utah and Cape Girardeau, Missouri, 120. of, 1027, 1099. Meteorite from Angra dos Reis, 1087. ---- fumaramate, 34. - from Djati Pengilon, Java, 1024. --- malamate, 34. — in a tertiary lignite, 22. — of Karang-Modjo or Magetan in Java, 710. · supposed metallic, from Highland Co., Virginia, 455. Meteorites, Coahuila, 455. TRANS., 498. from Kentucky and Mexico, 564. gaseous constituents of, 351. · iron, crystalline structure of, 119. Methæmoglobin, formation of, in blood by the action of alloxantin, 508. 238. Methamidoformic chloride, 358. tetramethylene Methane-derivatives, volatility of, 24. 238. · liquid, density of, 694. Methenylamido α-naphthyl mercaptan, Trans., 268. Methenyl-m-ditolylamidine and its derivatives, 935. Methethopropionic acid, 228. Methethopropyl carbinol, 228. Methoxychlorisoquinoline, 62. Methoxycinnamic (ortho-) acid diazochloride, 140. Methylals, 911. -o-m-nitro- and m-amido-, 140. Methyl-\$\beta\$ amidonaphthylhydroquino-Methoxydiallylacetic acid, 359. Methoxydibromosalicylic acid, 487. line, 682. a-Methylamidovaleric acid and its deri-Methoxydiquinolyline (α - and β -para-), vatives, 797. **97**9.

Methoxyhydroxyquinoline, 973. γ-Methoxymethylpseudocarbostyril, Methoxy-p-nitrobenzaldehyde (meta-), Methoxyphenylchlorisoquinoline, 62. Methoxyquinaldine, 680. Methyl acetate, influence of normal salts on the hydrolysis of, 102. - alcohol, estimation of, in presence of ethyl alcohol, 1142. — amidophenyl thioether, 823. – anacardate, Trans., 665. ---- anthracene-γ-carboxylate, 594. — benzyl carbinol, 35. bromisopropylphenyl oxide, oxida-— bromosalicylate, 486. --- bromoterephthalate, 52. — carbanilate, derivatives of, 143. chloride, action of, on o-dichlorobenzene in presence of aluminium cresolcarboxylate, 45. dehydracetate, Trans., 496. — diazosuccinamate, 34. m-o-dimethoxycinnamate, 140. — dimethylgentisate, 140. --- dinitro-o-toluate, 945. formates, chlorinated derivatives --- methoxybromosalicylate, 487. — methyldibromo-p-coumarate, 488. methyltetrahydropyridyl-β-benzoylhydroxypropionate (cocaïne), 742. - phenyllutidonecarboxylate, phosphate, Trans., 754. - propyl xanthate, 800. tetrachlorethyl ether, 28. tetrahydrothiophendicarboxylate, ketone, Trans., thiënyl thioether, 805. - thiocyanate, action of chlorine on, - m-tolyl ketones, 826. trimesate, 492, 588.
vanadate, Trans., 751. Methylacetoluide, m-nitro-p-, 937. Methylacridinechloral, 849. Methylal, physiological action of, 391. therapeutic action of, 684.

```
Methylamine vanadates, 899.
Methylanhydracetonebenzil, Trans.,
Methylaniline, 1:4 nitroso-, 244.
a-Methylanthracene, 965.
Methylanthragallols and their deriva-
  tives, 57.
a-Methylanthraquinone, 965.
Methylbenzamide, o-chloro-, 1038.
Methylbenzenes, action of methylene
  chloride on, in presence of aluminium
  chloride, 1102.
Methylbenzylamine, 719.
Methylbismuthine dibromide, 802.

    dichloride, 802.

    diiodide, 802.

    oxide, 803.

Methylbornylcarbamide, 377.
Methylcarbodinicotinic acid, α-, 1117.
          - 4-, 1118.
γ-Methylcarbostyril, 159.
a-Methyl-a-chlor-a-hydroxybutyric
  acid, 30.
a-Methyl-β-chlor-α-hydroxybutyric
  acid, 30.
Methylchloroxyisoquinoline, 1112.
Methylcinnamic acid (meta-), 829.
          - and its derivatives, 724.
Methylcinnamine (meta-), and its bromo-
  derivatives, 725.
Methyl-p-coumaric acid, dibromide, and
  its derivatives, 1110.
Methylcrotonic acid, 29.
Methyldehydrohexone, Trans., 723.
Methyldehydrohexonecarboxylic
  Trans., 715.
          - action of water on, Trans.,
   717.
Methyldehydrohexonedicarboxylic acid,
  TRANS., 744.
          - action of water on, Trans.,
   747.
a-Methyldichlorisoquinoline, 1112.
α-Methyldinicotinic acid [2:3:5], 1117.
Methyldiphenylglyoxaline, Trans., 557.
Methyl-emetonium hydroxide, 981.
Methylene chloride, action of, on methyl-
   benzenes in presence of aluminium
   chloride, 1102.
          – diiodo-, 905.
          iodo-, 905.

    substitution-derivatives of,

   905.
Methylene-blue, manufacture of, 480.
Methylenediamines, substituted, 1026.
Methylenephthalethimidine, 51.
Methylenephthalphenimidine, 52.
 Methylerythrohydroxyanthraquinone,
Methylethenyldiamidotoluene, 937.
      methiodide, 938.
Methylethylacetal, trichloro-, 28.
```

Methylethylaniline and its derivatives, 135. Methylethylindole [2':3'], 149. Methylethylphenylthiocarbamide, 823. Methylformanilide, 1038. Methylhexylacetoxime, 795. a-Methylhomo-o-phthalimide, 1112. a-Methylhomo-o-phthalonitrile, 1112. Methylhydrazinebenzenesulphonic acid, 934.Methylhydrindonaplithenecarboxylic acid, 836. Methylhydroxyanthraquinones, spectra of, 1. Methylhydroxyphenyl (para-) sulphide, 807. α -Methyl- β -hydroxyvaleric acid, 717. 3-Methylindole, 956. Methylindole-acetic acid, 149. Methylindolecarboxylic acid [3:2'], 956. Methylindoles, 957. action of aldehydes, anhydrides, and diazo-compounds on the three, 265.Methylindonaphthalenecarboxylic acid, 836. Methylisopropylacetic acid, 232. Methylisopropylacetone, 232. Methylisopropylmalonic acid, 232. Methylketine, 29. Methylketole, behaviour of, 273. Methyllepidine, bromo-, 160. Methyllepidone, 159. reduction of, 278. Methyllutidone, 500. Methyllutidonedicarboxylic acid, 500. Methylmalonic acid, action of nitric acid on, 466. Methyl- β -naphthaquinoline, 682. Methylnaphthaquinolines, 681. Methylnaphthindole, 154. Methyl-α-naphthindole, 964. Methyl-orange, 666. Methyloxanilide, 1038. Methyl-oxychlorisoquinoline, 62. β -Methyl- δ -oxyquinazoline, 1044. B-Methylpentathiënone, 239. β -Methylpentathiophen, 239. Methylphenylamidodimethylpyrroline, 276. Methylphenylanthranol, 266. Methyl-p-phenylenediamine, 667. Methylphenylhydrazine, 138. Methylphenylhydroxanthranol, 267. Methylphenylnitrosamine, p-nitro-, 244. p-nitroso-, 244. Methylphenylpropiolic acid (meta-), 725. β -Methyl- γ -phenyl- δ -pseudoxyquinazoline, 1045. Methylphenylthiocarbamine chloride. 823.oxide, 823.

1:3 Methylphenylthiophen and its derivatives, 1101.

α-Methylpiperidine, 740.

Methylpiperidines, α - and β -, 64.

Methylpropylaniline and its derivatives,

Methylpropylhydroxyphenyl (para-) sulphide, 808.

Methylpseudocarbostyril and its derivatives, 977.

Methylpyridines, a-, β -, and γ -, 59.

Methylpyrrolidine, 463.

β-Methylpyrrolidine, 735.

Methylpyrroline, action of acetic anhydride on, 843.

Methyl-γ-quinaldone, 680.

Methylquinolinecarboxylic acid [1:4], 502.

Methylsalicylaldehyde, m-nitro-, 140.

Methyltetrahydropyridyl-β-hydroxypropionic acid (ecgonine), 742.

 β -Methyltetramethylenediamine, 735. Methylthiënylglyoxylic acids, a-a-, and α - β -, 804.

Methylthioformaldine, 27.

Methylthiophencarboxylic acid, 921.

Methyl-p-toluidine, trinitro-, 1038. Methyltrihydro-o-hydroxyquinoline-

carboxylic acid, 738.

Methyltriphenylmethanecarboxylic acid, 265.

Methyluracil, dichloroxy-, 129.

– nitro-, 919.

nitro-derivatives of, 128.

Mica from Leon Co., Texas, 119.

Micas, iron-lithia, of Cape Ann, Massachusetts, 348.

Microbe of the indigo fermentation, 1061.

Microbes, nitrifying, 1134. Microchemical tests, 301.

Micrococcus cereus, a nitrifying agent,

Micro-organisms, behaviour of, in artificial mineral waters, 393.

from the mouth and from fæces, action of, on foodstuffs, 1059.

Microscopic analysis, 300.

Milk analysis, 751.

- Adams' method for, 186.

- changes in, produced by freezing, 745.

constituents, determination 1003.

detection of boron in, 864.

- determination of fat in, 308, 752, 1144.

- human and cows', albuminoïds of, 388.

- poisonous ptomaïne in, 389.

- presence of nitrites and nitrates in, as evidence of adulteration, 87.

Milk-sugar, alcoholic fermentation of, 1090.

variations in the proportion of phosphoric acid in, 856.

Mineral springs in Aegina and Andros,

Mineralogical notes, 342.

Minerals from the Sjö Mine, Sweden,

from Vulture and Melfi, composition of, 1087.

Mirror amalgam, composition of, 447.

Mirrors, magic, 327.

Molecular structure of carbon compounds and their absorption spectra, relation between. Part VIII, TRANS.,

Molecules, enveloping and secondary, 419.

Molybdenite, twin crystals of, 116.

Molybdenum, lower oxides of, 553.

Molybdic anhydride, colour reactions of, Monazite, twin crystals of, from North

Carolina, 118. Moorlands, basic-slag and other phosphates as manure for, 294.

Morindin, TRANS., 52.

Morindon, TRANS., 52.

Morphine, 280.

estimation of, 622, 869.

- hydrogen meconate, 505.

reaction, 870.

187. Mountain ash berries, tannic acid in, 950.

- separation of, from fatty matters,

Mucic diphenylhydrazide, 138.

Mucin in urine, 390.

Murexide, description and measurement of the spectrum of, TRANS., 199.

Muscle plasma, 984.

- voluntary, action of caffeine and theïne on, 985.

Muscles, heat developed by the activity of, 1059.

Muscovite from South Africa, 561.

Muscular activity, and the chemical effect of respiration, relation between, 1058.

formation of lactic acid during, 508.

Mydaleine, 386.

Myo-albumose, 984.

Myoctonine, 858.

Myoglobulin, 984.

Myohæmatin, 983.

Myosinogen, 984.

Myristica Surinamensis, aleurone grains in the seed of, 1061.

N.

β-Naphthacridine, 682. β -Naphthaldehyde, 675. Naphthalene, action of heat on the vapour of, 572. and ethylene, action of heat on the vapour of, 572. β -chloro-, β -bromo-, and β -iodo-, action of sulphuric acid on, Proc., 22. – chlorobromo-, 1113. compounds, constitution of, 1005. – dichloro-, 495, 961. — γ-dichloro-, 837. heat of combustion of, 762. – β -nitro-, preparation of, 590. sulphonic acids derived from the β -monohaloïd-derivatives of, Proc., trichloro-, 270. Naphthalenesulphonic acid, 1:4 chloro-, – 1 : 4' chloro-, 374. $-\frac{1}{\beta}$ -chloro-, 374. - - α-cyano-, Proc., 43. - - γ -, formation of, by means of sulphuric anhydride, Proc., 42. Naphthalene- β -sulphonic acid, bromination of, Proc., 113. Naphthalenesulphonic acids, β -bromo-, Proc., 23. - β -chloro-, Proc., 22. - β-iodo-, Proc., 23. Naphthalenetetracarboxylic dianhydride, 271. diimide, 272. Naphthalic acid, constitution of, 495. α-Naphthamide, 496. α-Naphthamidoxime, 373. β -Naphthamidoxime, 373. Naphthaphenazine, 591. Naphthaquinone, trichloro-, 270. α-Naphthaquinone, bromamido-, 838. -p-chlorobromo-, 1114. β -Naphthaquinone, and its bromo- and chloro-derivatives, 53. conversion of, into indonaphthenederivatives, 728. Naphthaquinone-anilide, dichloro-, 270. Naphthaguinoneimide, bromamido-, α-Naphthaquinoneoximide, bromohydroxy-, 838. β -Naphthaquinone-o-tolylhydrazide and its derivatives, 55. β -Naphthaquinone-p-tolylhydrazide and its derivatives, 55. α-β-Naphthaquinoxaline, 153. Naphthase, Laurent's, 153. α-β-Naphthazine, Trans., 99, 100.

β-Naphthazoximenaphthenyl, 374. Naphthenylamidoxime, α - and β -, and their derivatives, 374. α-Naphthindole, 964. β-Naphthindole, 153. a-Naphthindolecarboxylic acid, 963. β-Naphthindolecarboxylic acid, 154. a-Naphthoic acid, dinitro-, 373. Naphthoic acids, 373, 840. Naphthol, dichloro-, 270. a-Naphthol, diamido-, action of bromine on, 838. β-Naphthol, nitroso-, use of, in quantitative analysis, 530. β -Naphtholazonitro- ψ -cumenesulphonic acid, 953. Naphtholearboxylic acid, amido., 732. acids, 732 β-Naphthol-β-disulphonic acid, 269. Naphthols, chlorination of, 960. β -Naphthol- δ -sulphonic acid, 733. β-Naphthonitrile, action of sodium on alcoholic, 840. Naphthophenone oxide, α - and β -, and their derivatives, 152. Naphthostyril, amido-, 373. Naphthoxyacetic acids, a- and β -, 495. a-Naphthoylformic acid, 271. α-Naphthoylhydroxamic acids, α- and β-, 840. α -Naphthoyl- α -naphthamidoxime, 373. β-Naphthyl carbinol, 675. Naphthyl ethyl carbonate, 37. - mercaptans, amido-, 839. - amido-, α- and β-, 840. methyl ketone and its derivatives, 252.α-Naphthyl methyl ketone, 271. · phenyl ketone, 943. β-Naphthylamine, chloro-, 961. derivatives of, 838. Naphthylamine citrates, α - and β -, 154. dichloro- and monochloro-, 495. dinitro-, preparation of, 152. α-Naphthylamine, manufacture of, 1048. β-Naphthylaminesulphonic acid, Brönner's, 375. β -Naphthylamine- δ -sulphonic acid and its derivatives, 732. β-Naphthylaminesulphonic acids, 962. α-Naphthyldimethylpyrroline, 275. β -Naphthyldimethylpyrroline [1:2:5], a-Naphthyldimethylpyrrolinedicarboxylic acid, 275. 1:3-Naphthylenediamine, 674. Naphthylenediamine (para-), 1048. Naphthylenediamines, substituted, 839.

a-Naphthazoximethenyl, 373.

 $oldsymbol{eta}$ -Naphthazoximethenyl, 374.

a-Naphthylglyoxylic acid, 271.

a-Naphthylhydrazine, indoles from, 963.

a-Naphthylhydrazinepyruvic acid, 963. β-Naphthylhydrazinepyruvic acid, 153. β-Naphthylmethylamine, 675. β-Naphthylphenylamine, amido-, 730. α-Naphthylphenyl-β-pinacoline, 943. β-Naphthylthiamide, 675. Narceine, 280.

test for, 870.

Narcotine, 280.

Naringenic acid, constitution of, 497.

Naringin, 497. sugar from, 715.

Nematoïds of beetroot, destruction of, 617.

Nephrite from Alaska, 222.

Neutralisation, thermal phenomena of, Trans., 593.

Newbervite, 709.

Nickel and carbon galvanic elements,

and cobalt, separation of, from iron, 1141.

- cobalt potassium sulphate, Proc., 53.

 detection of adulteration in, by the magnet, 531.

estimation of, in ores, mattes, slags, &c., 303.

- microchemical test for, 300. - precipitation of, in presence of

iron, 1141. regulus, peculiar formation in,

1081.

separation of zinc from, 182. - volumetric estimation of cobalt in

presence of, 1141. Nicotine, reaction of, with ethyl iodide,

603. reaction with methyl iodide, 851.

reduction of, 161.

- specific rotation of, 756. Nicotinic acid, bromo-, 159.

- dichloro-, 158.

Niobic acid from fergusonite, 706. -- anhydride, action of carbon tetrachloride on, 329.

- - colour reactions of, 304.

crystallised, 642.

— crystalliseu, ozc.
— molecular heat of, 706. Niobium hydride and its molecular

heat, 706. potassium fluoride, reduction of,

with sodium, 706. Nitranilic acid, constitution of, 134.

— — formation of, 574. — — from chloranil, 926.

Nitrates and superphosphates, incompatibility of, as manures, 617.

determination of, in well waters, 691.

estimation of, in water by means of aluminium, 184.

- formation of, in the organism of the higher plants, 859.

Nitrates in animals and plants, 389.

 new method of testing for, 1138. percentage of, in unmanured soils, 83.

production of, in arable soil, 993.

Nitratopurpureorhodium chloride, 114.

- dithionate, 114.

— nitrate, 114.
Nitric acid, detection of, in a mixture of alkaline salts, 297.

— determination of, 181.
— not formed in the organism of higher plants, 686.

- ferment, distribution of, and its function in the disintegration of rocks, 1135.

nitrogen obtained from soils and sub-soils, Trans., 128, 129.

or nitrous acid produced in dilute urine with gypsum seeded with soil from various fields, TRANS., 120, 121, 122, 123.

- oxide, absorption of, by sulphuric acid, 526.

density of, at -100°, 887.

poisoning by, 392.

- reaction of, with ferrous hydroxide and water, TRANS., 648.

Nitrification, 84, 858.

- order of priority of commencement of, in solution seeded with soils of different depths, TRANS., 125.

Nitrifying microbes, 1134.

- organism, distribution of, in the soil, TRANS., 118.

Nitriles, aromatic, action of sodium and alcohol on, 719.

Nitrites, absence of, in plants, 989.

- and sulphites of metals other than potassium, reaction between, TRANS., 659.

colorimetric determination of, in water, 533.

- formation of, 106.

- reduction of, to hydroxylamine by hydrogen sulphide, TRANS., 48.

Nitrogen, action of, on certain metals, 702.

allotropic modification of, 329.

 ammoniacal, estimation of, in soils, 82.

assimilable, amount of, in uncultivated land, 82.

- atmospheric, acquisition of, by plants, 515.

— direct absorption of, by vegetable soils, 395.

--- chlorides, substituted, 44.

compounds in vegetable soils, 293.

- determinations, apparatus for Kjeldahl's method for, 298.

Nitrogen, estimation of, in organic substances, 862. estimation of, in urine, 863. fluoride, 770. - free, absorption of, by vegetable soils, 617. - formation of, during putrefaction, 172, 746. Kjeldahl's method for estimating, 78, 863. liquefied, density of, 694. loss of, by plants during germination and growth, 292. organic, in chemical manures, 863. - passage of electric discharge through, 328. peroxide, action of heat on, TRANS., - compound of amylene with, PROC., 108. refractive equivalent of, 193.
tetroxide, specific heat of, 429. Nitrogenous contents of the digestive juices, 1129. organic matter of soils, nature of, 523. substances, separation of, by means of phosphomolybdic acid, 310. Nitro-group, substitution of the amidogroup by the, in aromatic compounds, 720. Nitrometer, simple, 998. Nitrosamines, 729, 1114. -action of hydrogen chloride on, 244. Nitrous acid, 698. action of, on sulphurous acid, 549. - detection of, in a mixture of alkaline salts, 297. Griess's test for, in presence of hydrogen peroxide, 298. - - reaction of, with sulphurous acid, 635. volumetric estimation of, 396. Nobili's rings and allied electrochemical phenomena, 759. Norhydrotropidine, 740. Normeconine-acetic acid, 47. Normethyl-o-anhydramidohemipinic acid, 49. Normethylazo-opianic acid, 49. Normethylnitrohemipinic acid, 50. Normethylnitrohemipinimide, 50. Normethylnitropianic acid, 49. phenylhydrazine, 50. Normethylnitropianoximic acid, 50. Normethylnitropianphenylhydrazide, 46. Normethylnitropiazide, 50. Nutrition, animal, 856.

O. Oak-tannin, 584. Oats, American, variations in the chemical composition and physical properties of, 293. Octadecylbenzene and its derivatives, 253.Octadecylphenol, 253. Octyl mono-, di-, and tri-chloracetates, - nitrile, secondary, 458. Octylbenzene, 133. --- o-amido-, hydrochloride, 134. - bromo-, 133. --- chloro-, 133. --- dinitro-, 133. -- iodo-, 133. - o-, m-, and p-nitro-, 133. Odorous substances, minute quantities detectable of, 983. Œnanthaldehyde and heptyl chloride, action of, on dimethylaniline in presence of zinc chloride, 814. Oil, black pepper, 969. ethereal, of Allium ursinum, 1089. — of cardamoms, 596. - of peppermint, test for, 1001. ---- Turkey-red, 914. Oils, analysis of, 402. — drying, acids from, 359, 798, 913. essential, 375. ethereal, 595, 596, 965. - fixed, bromine and iodine absorptions of, 88. — chemistry of, 88. ---- coefficients of expansion of, 88. --- determination of glycerol in, 89. - methods of examining, 88. - --- saponification of, 186, -- sp. gr. of, 88. viscosity of, 88. -- iodine absorption by, 402. Maumené's test for, 89, 402. · mineral, separation of, from saponifiable fats, 1001. - the elaïdin test for, 402. Oleum bergamotiæ, 375. citri, 375. - cort. aurantiorum dulcium, 375, Oleic acid, new, 32. Oligoclase, 20. Olive oil, characteristics of, 535. detection of sesame and cotton oils in, **53**6. properties of, 536.

Onions, analysis of, 1137.

 Opianic acid, nitro-, reduction of, 584. - anhydride, 47. Opianoxime anhydride, 46. Opianoximic anhydride, 258. Opianphenylhydrazide, amido-, 45. Opiaurin, 580. Opium alkaloïds, 280. separation of the, 851. – analysis, 403. – assay of, 622. testing, 310. Orcinol, action of chloral hydrate on, 724. - dinitroso-, 808. Ore-veins, investigations on, 224. Organic compounds, liquid, specific heats of homologous series of, 6. matter, determination of, in natural water, 533. - estimation of, in water, 1000. - in air, determination of, 532. - substances, ferric chloride as a test for, 400. Organism, fate of certain chlorine compounds in the, 612. fate of lactic acid in the, 508. formates in the, 513. Orthobenzoquinone, derivatives of, 808. Orthoclase, artificial production of, 559. Orthocumic acid, 264. Orthoquinone, tetrabromo-, 808. - tetrachloro-, 808. Osmotic equilibrium, 1013. Oxalates, ethereal, action of alcohols and metallic alkyl oxides on, Trans., Oxalethyl-cenanthyline, 911. Oxalic acid, decomposition by sunlight, estimation of, in urine, 401.
from the residue of Spiritus ætheris nitrosi, 360. - — hydrated, dissociation of, 915. - influence of heat on the decomposition of, by ferric chloride, 324. Oxalimide, 234. Oxalmethyl-cenanthyline, 911. Oxalpropyl-cenanthyline, 911. Oxalyldiamido-a-naphthyl mercaptan, Oxalyldiamido-\(\beta\)-naphthyl mercaptan, 840. Oxamide, decomposition of, by water and dilute acids, 236. Oxanılic acid, halogen-derivatives of, Oxanilide, halogen-derivatives of, 251. Oxidation in the animal body, 610. with potassium permanganate, 146. Oxides, metallic, change in volume during the formation of, 1073. Oxyacanthine and its derivatives, 283. Oxycarbimidophenol, 245.

Oxychlorisoquinoline, 62. Oxydihydrotoluquinoxaline, 383. Oxygen absorbed in respiration, estima. tion of, 507. absorption of, by carbon, TRANS., 252. - action of animals on, 855. - action of light on the hydrides of the halogens in presence of, TRANS., active, formation in the atmosphere, 211. - formation of, in paper, 211. for determining - reagents minimal quantities of, 295. amount of, in the atmosphere, 634. and ozone, volumetric relations of, TRANS., 625. atomic weight of, 1078. chemical structure of, and its dissociation in the sun's atmosphere, 1070. - " devitalised," 855. -exhalation of, by fleshy-leaved plants in absence of carbonic anhydride, 988. - in the sun, 1065. - liquid, absorption spectrum of, 625. density of, 694. percentage of, in air, 885. - preparation of, with use of a Kipp's apparatus, 769. pure, preparation and storage of, TRANS., 611. - refractive index of, 193. relation of bacterial life to, 291. Oxyhæmoglobin, absorption of light by, Oxymethylethenyldiamidotoluene, 937. Oxymethylpyrrolidine, 463. Oxyquinizinecarboxylic acid, amido-, 468. Ozone and oxygen, volumetric relations of, Trans., 625. - boiling point of, 634. connection of the formation of, with atmospheric electricity, 211. - from pure oxygen, TRANS., 610.

Ρ.

influence of, on germination, 516.

— production of, 327.

Palladium, separation of mercury, lead, copper, and bismuth from, 302. Pallasite from Campo de Pucará, 904. Papaverine, 280. composition of, 852. derivatives, 163.

– salts, 164.

Paper, formation of active oxygen in,

Paper, quantitative estimation of wood in, 620. Paper-making, use of talc in, 452. Paracoumaric acid, 1109. - dibromide, bromo-. 110. Paracymyl phenyl carbinol, 942. ketone, 942. Paraffin oil, alkaloïd-like bases in, 979. - series, synthesis in the, by means of aluminium chloride, 656. Paragalactin, 460. Paragonite schist from the Oral, 351. Paraldehyde, action of quinaldine on, 975. physiological action of, 391. Paramyosinogen, 984. Paratungstates, 895. Parvoline, oxidation of, 379. Pease, composition of, 73. Pectolite from Auchensterry Quarry, Kilsyth, 645. - from Disco Island, 783. Pentadecyl phenyl ketone, 252. Pentadecylic acid, 651. Pentahydroxycaproic acid, 465. Pentamethylbenzene, action of sulphuric acid on, 660. Pentamethylbenzenesulphonic acid and its derivatīves, 660. Pentamethylene-derivatives, TRANS., 240. Pentamethylenediamine, of cadaverine with, 125, 1057. Pentamethylenedicarboxylic acid, Trans., 244. · anhydride, Trans., 247. Pentane- $\omega_2\omega_2$ -tetracarboxylic acid, Teans., 242. Pentathiophen group, 239. γ -Pentyleneglycol, Trans., 836. and its anhydride, 33. Pepper, analysis of, 312. oil, black, 969. Pepsin, comparative estimation of preparations of, 66. - methods of preparing extracts of, 65. versus animal digestion, 513. Peptones in the blood and urine, 188. Perbromic acid, 698. Percylite, from Chili, 902. Peridote of Schelinger Matten, 1086. Periodates, Trans., 356. Periodic law, 211. Permanganates, formation of manganites from, 552. Per-ruthenic acid in histology, 1060. Petroleum and the hydrocarbons of coaltar and shale-tar, relations between, 648. - Caucasian, constitution of hydrocarbons, C_nH_{2n} , from, 922. – Galician, bases in, 979. Russian, hydrocarbons of, 225.

Pettenkofer's reaction, 1149. Phellandrene, 967. Phenaceturic acid, synthesis of, 368. Phenacite from Colorado, 118, 452. Phenanthraquinone dihydrocyanide, Trans., 32. Phenazine-derivatives, 139. pyrogenic formation of, 249. Phenazoxine, 665. Phenethylamine, preparation of, 245. Phenetoil, heat equivalent of, 428. Phenol, action of phosphorous chloride on, 947. - action of sulphur dichloride on, 807. o-amido-, action of chloracetic chloride on, 814. - cause of the red colour of, 807. chloracetamido-, 814. – m-chloro-, 946. - o-chloro-p-brom-o-nitro-, derivatives of, Trans., 791. p-chloro-o-brom-o-nitro-, derivatives of, Trans., 788. p-chloro-p-brom-o-nitro-, derivatives of, TRANS., 790. · p-chloro-o-nitro-, action of bromine on, TRANS., 787. - dibromo-, 242. - dichloro-o-nitro-, TRANS., 782. - dichloro-p-nitro-, Trans., 786. - higher homologues of, conversion of, into amines, 721. homologues of, oxidation of, 241. isolation and detection of, 867. monobromo-, a fourth, 134. -occurrence of, in human sweat, oxidation of homologues of, 1035. · series, isomeric change in, TRANS., 147, 782. tribromo-, derivatives of, 573. Phenolphthalein, behaviour of alkaline solutions of, in presence of alcohol, 4' Phenolquinolines, α - and β -, 599. Phenols, action of aldehydes on, 270. - action of benzaldehyde on, 723. action of chlorine on, 960. - action of hydrogen chloride on a mixture of, with aldehyde, 231. condensation of, with aldehydes, 825. conversion of, into amines, 576. - dibromonitro-, action of bromine

on, TRANS., 147.

on, 809.

and formation of, 98.

higher, action of cyanuric chloride

- homologous, heats of combustion

polyvalent, action of acetaldehyde

and chlorocyanuric diamide on, 1033.

nitro-, and phenylhydrazine, 722.

1236 Phenols, reaction of diazoamido-compounds with, 664. Phenolsulphonic acid, amido-, action of bleaching powder on, 834. Phenosafranine, constitution of, 140. - hydrochloride, 250. Phenoxyaceticacrylic acid methyl ketone, 259. acids, 259. Phenoxyacetic-m-carboxylic acid, 259. Phenoxyacetic-p-carboxylic acid, 258. Phenyl, o-amido-, mercaptan and disulphide, 823. - benzoate, m-nitro-, 254. diphenylcarbamate and its nitroand amido-derivatives, 936. ethyl ketone and its derivatives, - group, negative nature of the, 572. - mercaptan, o-amido-, and its derivatives, 1039. - methyl ether, chlorine-derivatives of, 923. - m-nitrobenzoate, nitro-, 254. – paratolyl bisulphide, 242. - propyl ether, heat equivalent of, 428. - pyridyl ketone, 737. - tetrasulphide, 923. - thiobenzenesulphonate, reduction of, 954. - thiotolyl ketone, 238. Phenylacetic acid, 829. - phenylhydrazide, 138. Phenylacetonitrile carbamide, 1055. Phenylamidine, 1040. Phenylamidoacetic acid, derivatives of, 1108. Phenylamidolutidine, 501. Phenylamidopropionic acid from the decomposition of proteïds, 369. Phenylamidoquinaldıne, 680. Phenylammeline, 1034. Phenylasparaginanil, 934. Phenylaspartic acid, 934. Phenylazodimethylamidobenzene, nitro-, 152. Phenylazoethylresorcinol (ortho-), 662. Phenylbismuthine dibromide, 368. a-Phenylcinchonic acid, 504. Phenylcrotonitrilecarbamide, 1055. Phenylcumylthiocarbamide, 1039. Phenylcyantetrazole, 139. Phenyldehydrohexone, Trans., 731. action of hydrogen bromide on, TRANS., 732. Phenyldehydrohexonecarboxylic acid, TRANS., 728.

- action of hydrogen bromide

- action of water on, Trans.,

on, TRANS., 732.

733.

Phenyldehydrohexonecarboxylic acid. p-nitro-, Trans., 736. Phenyl- γ - δ -dibromovalericacid, o-amidodibromo-, 486. Phenyldimethylethylammonium tri-, penta-, and hepta-iodides, 910. Phenyldimethylpyrazolecarboxylic acid, 67Š. Phenyldimethylpyrazolone, 601. Phenyldimethylpyrroline [1:2:5],Phenylditolylmethane, m-nitro-, 44. Phenylethane, dimethamido-, 1039. nitrosomethamido-, 1039. Phenylene dibromodichlorethylene ketone, 955. tetrachlorethylene ketone, 955. -o-, p-, and m-thiocarbamide, 366. Phenylenechlorohydroxyacetylene tone, 728. Phenylenediamine (meta-), dinitro- and diacetodinitro-, 477. Phenylenedibromacetylene ketone, 729. Phenylene-m-diphenylsulphone, action of potash on, 372. Phenylglucosazonecarboxylic acid, 150. Phenylglutaric acid, 672. Phenylglycerosazone, 651. Phenylglycidic acid, 254. - Plöchl's, 142. Phenylglycinephenylamidoacetic acid, 1108. Phenylglycollic acid, o-nitro-, reduction of, 948. Phenylglyoxylic acid, formation of, from benzoic cyanide, 487. preparation of, from acetophenone, 483. Phenylhydrazine, 138. —— action of carbamide on, 1042. preparation of, 1042. – titration of, 1042. Phenylhydrazineamidoxalacetic acid, 467. Phenylhydrazinebenzal acetone, 678. Phenylhydrazinedehydracetic Trans., 494. Phenylhydrazine-ethyl oxalacetate, 235. B-Phenylhydroxypropionic acid, iodo-, **4**5. Phenylhydroxypropionic acids, α- and a-β-, 1046. Phenylindole, 956. Phenyliodohydracrylic acid, 45. Phenylisobutyric acid, derivatives of, 583. Phenylisopropylamine, 583. Phenylizindihydroxytartaric acid, 578. Phenyllactosazone, 567. Phenyllepidinamine, 159. Phenyllutidine, m-amido-, 1053. Phenyllutidinedicar boxylic

amido-, 1053.

Phenyllutidone, 501; TRANS., 499.

Phenyllutidonecarboxylic acid, 501. Phenyllutidonedicarboxylic acid, 500. Phenylmaltosazone, 567.

Phenylmethacrylic acid, derivatives of,

Phenyl-p-methoxyhydroquinoline, α -mamido-, 978.

Phenyl-p-methoxyquinoline, a-m-nitro-, and its derivatives, 978.

Phenylmethylacridine, 928.

Phenylmethylamidopyrimidine, 1054. Phenylmethylbenzylidenepyrazolone, 602.

Phenylmethylcinnimenepyrazolone, 602.

Phenylmethylcyantriazole, 138.

Phenylmethylhydroxybromopyrimidine, 1053.

Phenylmethylhydroxypyrimidine, amıdo-, 1054.

Phenylmethylisonitrosopyrazolone, 602. Phenylmethylisopropylenepyrazolone,

Phenylmethylnitropyrazolone, 602.

β-Phenyl-γ-methyl-δ-pseudoxyquinazoline, 1045.

Phenylmethylpyrazoline, 601.

Phenylmethylpyrazoloneazobenzene, 602. Phenylmethyltriazole, 139.

Phenylmethyltriazolecarboxylic acid and its derivatives, 138.

Phenylnaphthophenanthrazonium hydroxide and its salts, 730.

Phenyl-\beta-naphthylamine, azo-derivatives of, 730.

Phenylnitrobenzenesulphazide, m-nitroand p-nitro-, 723.

Phenyloxyacrylic acid, p- and o-nitro-,

 β -Phenyl- δ -oxyquinazoline, 1044.

Phenylpiperidine and its nitro-derivatives, 604.

Phenylpiperidylcarbamide, 385. Phenylpropyl alcohol, 35.

Phenylpropylene, dinitro-, 583.

Phenylpseudoisatin, 956. Phenylpyrazole, 1054.

Phenyl-m-pyrazole, 1055.

Phenylpyrazoline, 932.

Phenylpyrrolinedibenzoic acid, 735.

Phenylpyruvic acid, 142, 255, 587. 4'-Phenylquinoline and its derivatives,

Phenylseleniocarbimide, 43.

Phenylsorbinazone, 567. Phenylsuccinimide, 489.

Phenylsulphinacetic acid, non-existence

of, 263. Phenylsulphocyamine, a-amido-, 833. Phenylsulphone, dichloro-, 1101.

Phenylthiocarbimide oxide, 581. α-Phenylthiophen, synthesis of, 238. Phenyl-p-toluidine and its derivatives, 927.

Phenyltribromothiophen, p-bromo-, 239.

Phenyltrimethylpyrazolone, 601. Phenylurazole, 1043.

Phenylvaleric acid, o-amido-, derivatives of, 485.

- *o-*amidodibromo-, 486.

Phlorizin, Trans., 634.

- dextrose from, Trans., 636.

Phloroglucinol, furfuran - derivatives from, 262.

paracoumarate, 497.

Phosgenite from Chili, 902.

Phosphates, arsenates, and vanadates, analogous, TRANS., 94.

bibasic, thermochemistry of, 202.

- bimetallic, 214.

- colloidal and crystallised, thermochemistry of, 94.

insoluble, finely ground, as manures, 995.

mineral, estimation of iron oxide and alumina in, 302.

of the alkaline earths, 877.

 retrograde, agricultural value of, 861.

thermochemistry of, 94.

trimetallic, heat of formation of, 877.

various, manurial experiments with, 1137.

a-Phospholuteotungstic acid, 777.

Phosphomolybdates, constitution

Phosphomolybdic acid, solubility of, in ether and water, 547.

Phosphonium chloride, critical point of,

Phosphoplatinous chloride, 458. Phosphorescence, 410.

· of alumina, 191, 1006.

- of calcium carbonate, influence of manganese on, 190.

- of calcium sulphide, 539, 540.

 violet, of calcium sulphide, 2. Phosphoric acid, estimation of, 397, 864, 10**63**.

estimation of, from the weight of the molybdate precipitate, 526.

tree, and superphosphates, 995.

- in Chili saltpetre, 558.

- separation of, from tungstic acid, 866.

- value of, in basic slag, 687.

- variations in the proportions of, in milk, 856.

- anhydride and sulphuric anhydride, combination of, 328.

— in felspar, 347.

Phosphorites, occurrence of iodine in, $22\bar{2}.$ Phosphoroscope, modification of, 1066. Phosphorus, amorphous, action of, on solutions of silver and copper nitrates, colorimetric estimation of, 999. detection of, by Mitscherlich's method, 526. determination of, in basic slag, 527. determination of, in steel and iron, 299, 396, 527. estimation of, in pig-iron and steel, --- pentafluoride, 212. --- rapid estimation of, in iron, 865. - 'red, moist, action of light on hydrogen bromide and iodide in presence of, Trans., 806. vapour-density of, at a white heat, 888. Phosphotungstic acid, 703. acids, 777. Photography, orthochromatic, 874. Phthalaldehyde, 482. Phthalaldehydic acid, 951. Phthalaldoxime, 482. Phthalethimidylacetic acid, 51. Phthalic acid, chloro-, 837. — — dichloro-, 270. — β-dichloro-, 831. — phenylhydrazine, 669.
— tetrachloro-, and its derivatives, 832. – acids, bromo-, 668. reduction of, 370. Phthalide, action of phenylhydrazine on, 489. - amido-, 951. - p-chlorobromo-, 1114. – dichloro-, 83**2**. Phthalimide, dichloro-, 832. Phthal- β -naphthylimide, 839. Phthalylacetic acid, action of amines on, 51. a-Phthalylbenzoylphenylhydrazine, 670. Phthalyldiphenyldihydrazide, 670. α-Phthalyldiphenylhydrazine, 670. α-Phthalylnitrosophenylhydrazine, 670. Phthalylphenylbenzohydrazinic acid, 671. Phthalylphenylhydrazidamide, 670. β-Phthalylphenylhydrazine, 670. a-Phthalylphenylhydrazine, nitro-derivatives of, 670. Phyllocyanic acid, 1116. Phymatorusin, 168. Platinum and tin, alloy of, 779. Physiological action and chemical constitution, 985. α-Picoline, action of chloral on, 845. Picolinedicarboxylic acid, 379.

Picolinetricarboxylic acid, a- [2:3:5], 1117. -[4:2:3:5], 1119.Picolinic acid, chloro-, 157. Picric acid, colour reactions of, 624. Picrocarmine, preparation of, 1117. Picromerite, 1085. Picrylhydroxylamine, 664. Pig, digestion in the, 512. period required for digestion in the, 684. Pig's bile, the acids of, 742. Pig-iron. See Iron. Pilocarpidine, synthesis of, 1058. Pilocarpine, synthesis of, 1057. Pimelic acid, Trans., 242. Pipecoleïne, 740. - α -, specific rotation of, 283. Pipecolines, α - and β -, 64. Piperideïne series, 740. Piperidine, action of phosphoric chloride on, 384. --- bases, 64. specific rotation of, 164, 282. derivatives, new synthesis of, 164. Piperidyloxamic acid, 385. Piperilene, bromination of, 457. Plagioclase from California, 20. from Porthalla Cove, Cornwall, 1022. - from Tynemouth Dyke, 784. Plants, action of alkaloids on, 859. chlorosis in, 76. fleshy leaved, exhalation of oxygen by, in absence of carbonic anhydride, 988. flowering, aluminium in the ashes of, Trans., 748. - formation of albumin in, 615. - formation of albuminoïds in, 70. germinating, presence of choline in, 747. - higher, are nitrates formed in the organism of? 859. - is nitric acid formed in the organism of? 686. influence of the ferrous oxide in basic cinder on the growth of, 178. · liberation of nitrogen from its compounds and acquisition of atmospheric nitrogen by, 515. loss of nitrogen by, during germination and growth, 292. molecular respiration of, 988. — nitrates in, 389. - poisoning of, by lithium salts, 991. - relation between inorganic salts containing nitrogen and, 989.

- compounds, ammoniacal, 642. - discovery of, in the sun, 1065.

tive radiation of, 1010.

- fused, and fused silver, compara-

Platinum, iron, and copper, alloys of, metals, products of the action of acids on alloys of, 900. - separation of gold from, 1084. — silicide, 450. — thallium in, 702. Plattnerite, 451. Plumbocalcite from Wanlock Head, 557. Poisons, gaseous, action of, 392. Polarisation of copper by the extension of the surface in contact with a liquid conductor, 757. Polyarsenite, a new mineral, 346. Polycoumarins, 830. Polyiodides, 910. crystallographic examination of, 910. Polymnestum, 107. Porphyry from Horka, Prussia, 223. Potash, crude, determination of alkaline chlorides in, 1138. liquors, Stassfurt, working up of, 1079. Potassium alkyl oxides, heat of formation of, 318. and sodium, separation from lithium, magnesium, and calcium, 528. aurobromide, crystalline form of, 1079. - preparation of pure, Trans., 868. chlorate and perchlorate, action of heat on, 767. - decomposition of, by heat, Trans., 274, 285. - chloride, influence of pressure and temperature on the action of crude methylamine carbonate on, 771. - chlorobromanilate, Trans., 785. – chromiodate, 776. - chromoxalates, Trans., 384. cobaltic oxalate, 220. cuprous thiosulphate, hydrated and anhydrous, TRANS., 38. detection of, 1138. estimation of, in ashes and minerals, 864. ferrate, preparation of, as a lecture experiment, 769. germaniofluoride, 704, 1083. glyceroxide, heat of formation of, 320. glyceroxides, alcoholates of, 427. - heptamanganite, 552. hydroxide, hydrates of, 636. — iodide, vapour-density of, 550. – manganic oxalate, 800.

manganites, 892.

formation of, 204.

- methoxide and ethoxide, heat of

Potassium, nitrouracilcarboxylate, 919. perchlorate, decomposition of, by heat, Trans., 274, 285.

— periodates, Trans., 357. - permanganate, action of sulphuric acid on, 893. - decomposition of, by heat, 552. ---- phenylhydrazine, 366. — phosphorescence of, 1068. silver thiosulphate, Trans., 39. — sodium cobaltic oxalate, 220. o-sulphethamidobenzoate, 835. - sulphur compounds, conductivity of, in solution, 758. tartrate, preparation of, 571. - vanadates, 639. Potatoes, composition of, 747. diseased, amount of solanine in, 860. estimation of starch in, 868. experiments on, at Harelaw, in 1886, 992. - growth of, 71. iron sulphate as manure for, TRANS., 222. Potential meters, application of electrolysis to the standardising of, 315. Powders, development of heat when moistened, 9. Prædacite, Christiania, 563. Precipitation, theory of fractional, 325. Prehnite from Jordansmuhl, Silesia, 223.- from Striegau, Silesia, 223. Pressure, effect of, on the decomposition of dissolved chlorides, 697. estimation of, in closed tubes, 1014. influence of, on the reaction between sodium sulphate and barium carbonate, 332. Propaldehyde and acetaldehyde, action of aniline on a mixture of, 974. - and methylal, action of aniline on a mixture of, 975. Propenylsalicylic acid (para-), 241. Propeptone, pyrogallol as a reagent for, α-Propioacrylic acid, 717. Propionamide, a-anilido-, 143. - α -p- and α -o-toluido, 143. Propionates, acid, 231. - metallic, 654. Propionic acid, α -anilido-, 143. - --- bromotrichloro-, 570. - eta-dichloro-, and its derivatives, 912. — β -iodo-, preparation of, 232. - α-p-, and α-o-toluido-, 143. Propionic acids, substituted, 570. Propionitrile, a-anilido-, 142.

Propionitrile, hydrogenation of, 457. - α-p- and α-o-toluido-, 143. Propionylacetophenone, 943. Propionylopianic acid, 47. Propionylpyrroline, 844. Propoxylbromosalicylic acid, 487. Propyl dioxythiocarbonate, 800. - vanadate, Trans., 753. Propylamines, normal, preparation of, 652.Propylbenzene, chloro-, 35. Propylbenzoylecgonine, 1126. Propylene, a-chloro-, 656. α-Propylene dinitrite, 458. Propylhydrocarbostyril, 132. Propylhydrocinnamic acid (para-), 133. α-Propylpiperidine, 161. Propylthiënylglyoxylic acid, 804. Propylthiophen, bromo-, 804. derivatives, 804. – dinitro-, 804. – iodo-, 804. Propylthiophenic acid, 804. Propylxanthic acid, 800. Proteïds of cerebrospinal fluid, 614. of muscle plasma, 984. - of seeds, changes in, during germination, 987. of the seeds of jequirity, 990. relation of, to digestive ferments, 1129.Protoalbumose, 285. Protoplasm from recently killed animals, fermentation by, 984. · living, reduction of silver salts by, 987. Protovitellose, 286. Prussian and Turnbull's blues, composition of, TRANS., 644. Pseudobiotite, 646. Pseudocarbostyril, derivatives of, 977. Pseudocumene, action of methylene chloride on, in presence of aluminium chloride, 1102. Pseudocumenequinol, 255. Pseudocumenequinone, nitro-, 255. Pseudocumenyi-y-ketonic acid, 827. Pseudocumyl phenyl ketone, 942. Pseudolutidinecarbostyril, 502. Pseudomorphine, 163. Pseudophite from South Africa, 561. Pseudophthalimidine, 1038. Pseudoquinisatin, 978. Psilomelane, occurrence of lithium in, Pterocarpin from sandal wood, 971. Pterolite from Lövö, 350. Ptomaine, a new, producing tetanus, 284. · poisonous, in milk, 389. Ptomaïnes, 385. - from pure cultivations of Vibrio proteus, 742.

Ptomaïnes, origin of, 387. Purpurogallin, 733. Putrefaction, aromatic products of, in human sweat, 1132. formation of free nitrogen during, 746. - is free nitrogen formed during? 172. Pyrazole-derivatives, 678, 1054. Pyrazoles (meta-), 1055. Pyrazolines, 601. Pyrazolone-derivatives from ethyl benzovlacetate, 1121. Pyrazolones (meta-), 1055. Pyrene, 271. constitution of, 496. ketone, 272. Pyridanthrilic acid, 979. Pyridine, action of chlorine on, 277. - bases, halogen-derivatives of, preparation of, from pyridinecarboxylic acids, 844. preparation of, 499. constitution of, Trans., 409. derivatives, conversion of pyrroline into, 678. · from m-nitrobenzaldehyde, 1053. preparation from citric acid, Trans., 403. - synthesis of, 155. --- dichloramido-, 157. dichlorethoxyhydroxyamido-,157. - dichlorodiethoxyamido-, 157. - tetrachloramido-, 157. — trichloramido-, 156. - trichlorethoxyamido-, 157. - trichloro-, 158. Pyridinedicarboxylic acid, 63. - bromo-, 159. Pyridinepolycarboxylic acids, 1117. Pyridinetricarboxylic acid, dibromo-, 844. Pyridylquinoline, 64. Pyridylquinolinecarboxylic acid, 64. Pyrimidines, 1053. Pyrites, burnt, estimation of small quantities of silver in, 79. "Pyrocresols," isomeric, constitution of, Proc., 114. Pyrogallol, action of chlorine and bromine on, 925. heat of combustion of, 762. - trichloro-, 925. Pyrogenic reactions, 572. Pyrometer, new, 1073. Pyromucic acid, chloro-, 469. - dichloro-, 34. - β-y-dichloro-, and its derivatives, 470. Pyromykuric acid, 1032. – carbamide, 1033.

derivatives of, 658.

— — constitution of, 657.

Pyroxene from the Krimlerthal, 902.

Pyrrolidine, 499.

— formation of, 1052.

Pyrroline, action of acetone on, 1052.

— action of propionic anhydride on, 844.

— bases, synthesis of, 598.

— constitution of, 273.

— conversion of, into pyridine-derivatives, 678.

Pyrotritartaric acid, bromo- and chloro-

-— derivatives, conversion of, into pyridine-derivatives, 378.

----- extraction of, from animal oil, 59.
----- reaction of acetone with, 598.

series, determination of position in the, 597.

—— synthesis of, from succinimide, 273.

—— tetriodo-, 597.

Transformation of furfuran into, 470. Pyruvic acid, compound of, with hippuric acid, 44.

———— derivatives, 260.

Pyvuramide, dibromo-, 918.

Pyvureid, dibromo-, 918.

Pyvurine, tribromo-, 918.

Q

Quartz, artificial production of, 559. - crystals with basal plane, 119. Quartzite, 451. Quercin, 909. crystalline form of, 1026. Quercite, heats of combustion and formation of, 1011.Quinaldine, bromo- and chloro-, 1113. -- γ-chloro-, 680. condensation of, with aldehydes, 975. combination of, with formamide, 381. Quinalizarin and its derivatives, 593. Quinazolines, 1044. Quinic acid, heats of combustion and formation of, 1011. Quinine chromate in analysis, 404. — hydrochloride, normal, 980. - sulphate, analysis of, 404, 405. estimation of, 1145.
estimation of cinchonidine in, testing, 623, 1146. Quinizines, 601. Quinol and its derivatives, 364. - chlorotribromo-, Trans., 784. diacetylchlorotribromo-, TRANS.,

784.

Quinol, dinitro-, constitution of, 574. — heat of combustion of, 762. - tetrachloro-, 42. Quinoline, bromo-, and its derivatives, o-chloro-, action of acetamide on, 848. derivatives, 738. from β-diketones, 849. ethyl acetoacetate, 679. - existence of two series of 4-(ana) substituted derivatives of, 973. - homologues of, transformation of homologues of indole into, 1113. - propiobromide and its dibromide, diiodide, dichloride, and tetriodide, 60, 61. propiochloride and its dibromide, dichloride, and diiodide, 61. propiodide and its dibromide, dichloride, diiodide, tetrabromide, tetrachloride, and tetriodide, 61. reactions of, 847. -- -red, 380. - silicon chloride, TRANS., 47. -- tribromo-, 278. a-Quinoline dicyanide, 379. Quinolinecarboxylic acid, 1:4 bromo-, m-Quinolinecarboxylic acid, 160. synthesis of, 503. a-Quinolinedicarboxylic acid, 379. Quinolinedisulphonic acid, 379. a-Quinolinedisulphonic acid, derivatives from, 973. Quinolinesulphonic acid, 737. --- acids o- and m-, 601. - --- o- and p-, 278. Quinolinic anhydride, 737. Quinone, a, obtained in the destructive distillation of teak, Trans., 870. chlorotribromo-, Trans., 783. - derivatives, constitution of, 719. – dinıtro-diamido-, 930. heat of combustion of, 762. Quinonedioxime, 575. Quinone, ortho-. See Orthoquinone. Quinones, action of yellow ammonium sulphide on, 1045. - preparation of, 1036. secondary and tertiary, 473. Quinoneoximes, 41. Quinoxaline series, nomenclature of, 382.

R.

Racemic acid, Trans., 362. Radiant matter spectroscopy, 1066.

of,

298.

analyses

Radiation, comparative, of fused platinum and fused silver, 1010. Raffinose, formation of galactose and levulose from, 791. — See also Melitose. Rain-water collected at Circucester, amount of chlorine in, TRANS., 92. Rape seed oil, constituents of, 1030. Rapic acid, 1030. Ralstonite, 345. Raspberries, wine and brandy from, Reactions, chemical, application of the electrometer to the study of, 882. Realgar, chemical nature of, 888. Recalescence, 14. Red liquors, examination of, 1063. Refraction, molecular, of carbon compounds of high dispersive power, 626. of liquid organic compounds of high dispersive power, 191. — of the hydrocarbons, supposed influence of multiple bonds of union on, 198. relations, 200. Refractive power of compounds, in-fluence of simple and so-called multiple union of atoms on, 1005. Reichert's distillation process, 1145. Resin from teak, Thans., 869. oil, fatty acids occurring in, 683. Resins, separation of, 406. Resorcinol, behaviour of ethyl oxalate with, 949. derivatives, 660, 661. - dinitroso-, 808. --- furfuran-derivatives from, 262. — manufacture of, 574. - mono- and di-bromo-, 924. Respiration, chemical effect of, and muscular activity, relation between, estimation of the carbonic anhvdride expired and oxygen absorbed in, - intermolecular, 686. molecular, of plants, 988. Rhodium and tin, alloy of, 779. Ricinoleic acid, oxidation of, 716. Rock salt, dispersion in, 754. Rocks, eruptive, from Krzeszowice, Cracow, 563. from Vulture and Melfi, composition of, 1087. - function of the nitric ferment in the disintegration of, 1135. – Japanese, 564. — Norwegian, 562. — Persian erupti

eruptive,

volcanic, composition of, 1023.

Rosaniline base, description and measurement of the spectrum of, TRANS., description and measurement of the spectrum of, TRANS., 169. salts, and sulphonated rosaniline, detection of, 405. Roseocobalt pyrophosphate, 776. Roseo-rhodium bromide, 113. - cobalticyanide, 114. - iodide sulphate, 114. — nitrate, 113. - orthophosphate, 114. platinochloride nitrate, 113. – sulphate, 114. - sodium pyrophosphate, 114. --- sulphate, 113. Roshydrazine, 822. Rosindole, 588. Rottlerin, 498. Rubazonic acid, 602. Ruberythric acid, 1051. Rubidium cobalt nitrite, 13. Rubies, artificial, formation of, 556. Ruby, Balas, artificial production of, 707. Ruthenium and tin, alloy of, 779. Rye, manuring with basic-slag and other phosphates, 294. S. "Saccharin," 836. Saccharose, decomposition of, by boiling with lime, 1026. - tetrabenzoate, 229. Saccharoses, action of dilute acids on,

Safranine, constitution of, 249, 250. - dyes, 249. Safranines, constitution of, 139, 480. Safrole, 990. Salicylaldehyde, action of, on sodium succinate in presence of acetic anhydride, Trans., 61. Salicylaldehydes, nitro-, 938, 939. Salicylic acid, action of phosphoric chloride on, 725, 947. action of phosphorous chloride on, 946. - --- detection of, 185. - dibromo-, constitution of, 487. heat of combustion of, 762. - acids, chloro-, 945. substituted bromo-, 486. Salicylphosphorous chloride, 946. Saliva, action of, on starch, 354.

- parotid, gases of, 287.

presence of hydrogen peroxide in,

Salt solutions, boiling points of, 1012. — expansion of, 760. - supersaturation of, TRANS., 389. --- vapour-tension of water from, 321. - vapour-tensions of, 764. Salts, conductivity of, in dilute solutions, containing water of crystallisation, dissociation of, 207. - deliquescence and efflorescence of, in relation to the maximum vapourtensions of their saturated solutions, 208. density of weak aqueous solutions of certain, 209. heat of dissolution of, in water, influence of temperature on, Proc., 66; Trans., 290. Samarium, spectra of, 1008. Samarskite, new elements in, 334. Sanguinarine, 854. Santonin, manufacture of, 677. - oxidation of, 733. Saponification, velocity of, 767. Sapphirine from Greenland, 784. Saprine, 386. Sarcomata, melanotic, pigments of, 168. Sarkinite, a new manganese arsenate, Sativic acid, constitution of, 799. Sausage poisoning, 392. Scale, crystalline, formed in the manufacture of sodium hydrogen carbonate, 108. Scandium, phosphorescence of, 1068. Scapolite series, 560. Scheelite from the Krimlerthal, 902. Schoolrooms, carbonic anhydride in the air of, 888. Schweizer's reagent, 773. Scolezite from Štriegau, 903. Scorodite from Utah, 783. Sebaceodinitranilide, 935. Secretions, digestive, in the horse, 744. Seeds, changes in the proteïds of, during germination, 987. ripening of, 173. Seleniferous sulphuric acid, detection of nitrogen compounds in, 998. Selenious acid, saturation of, by bases, 106. and sulphuric anhydrides, compound of, 212. Selenium, action of, on aqueous silver nitrate, 331.

– alums, 1014.

light in, 693.

electromotive force produced by

microchemical test for, 301.

Sensitisers, photographic, 874.

Serin, absorption-spectrum of, Trans., Serpentine-chlorite group, minerals of, 783. - manganese zinc, from Franklin, New Jersey, 646. Serpentines from Porthalla Cove, Cornwall, 1022. Serum, blood, new constituent of, 983. - fibrinogen, 983. Sesame oil, properties of, 536. Sesquiauramine, 112. Sesquihydraurylamine, 112. Sesqui-magnesia alum, 558. Sesquiterpenes, 596. Shale spirit, composition of, Proc., 97. - tar, relation between petroleum and the hydrocarbons of, 648. Sheep, amounts of nitrogen ingested and recovered in manure, 175. grazing, quantity of fertilising matter supplied to the soil by, 175. Shikimic acid, 497. Shot, analysis of, 446. Silage of maize, 521. of vegetable matter, 521. Silica, crystallised, artificial production of, 559. Silicates, analysis of, in the dry way, Lawrance Smith's plan for estimating alkalis in, 181. Silicic acid, decomposition of, by leaves, Silicocarbonate, crystalline, from soda liquors, 12. Silicon, atomic weight of, Trans., 576. chlorobromide, a new, Trans., 590. compounds and their derivatives, TRANS., 202. dichloro-, di-\(\beta\)-naphthyldiamide, TRANS., 45. diphenyldiamide, TRANS, 40. -- o-ditolyldiamide, TRANS., 44. – dixylyldiamide, Trans., 44. estimation of, in iron, 527. - estimation of, in iron and steel,

· fluoride, compounds of, with or-

- hydride, preparation of, as a lec-

- influence of, on the condition of

- influence of, on the properties of

in iron, influence of, on the mecha-

Part I, TRANS.,

1140.

129.

ganic bases, 243.

iron and steel.

ture experiment, 769.

carbon in cast 1ron, 220.

nical properties, Trans., 141.

Silicon in specially pure iron, TRANS., Slag, basic, manurial value of, 176, phosphate, hydrated, 329. manuring rye with, 294. - rapid estimation of, in iron and --- manuring with, 524. steel, 1140. -- value of the phosphoric acid - tetrabromide, action of, on thioin, 687. carbamide, TRANS.. 202. Slags, determination of metallic iron in, Silicotungstic acid, 703. 1140. Silkworms, feeding and development of, soluble, estimation of sulphur in, 526. Silver, action of acidified potassium Smell, sensitiveness of the sense of, 983. Soap, carbolic, assay of, 185. permanganate on, 1079. - ammonio-nitrate, 331. - determination of fatty acids in, — arsenates, 215. --- atomic weight of, 444. Soaps, estimation of fatty acids in, 401. - Chaldean, 443. Soda liquors, a crystalline silicocarbo-- chloride, photochromatic propernate from, 12. ties of, 1071. lyes, crude, examination of, 1063. - chromate, solubility of, in ammomanufacture, occasional products nium nitrate, 216. of, 331. -- containing bismuth, TRANS., 410. Sodium, action of, on the ethyl salts of — electrolysis of, 315. the higher fatty acids, 1099. - estimation of small quantities of, · alkyl oxides, heat of formation of, in burnt pyrites, 79. 319. fused, and fused platinum, comparative radiation of, 1010.
hydrogen tartrate, Trans., 370. - amidohemipinate, 49. - and lithium, estimation of, in mixtures of their carbonates, 864. - lowest compounds of, 699. - and potassium, separation from microchemical test for, 300. lithium, magnesium, and calcium, 528. - arsenate, TRANS., 95, 97. nitrate, action of arsenic, phosphorus, selenium, and tellurium, on solu- hydrates of, 698. tions of, 331. benzoic sulphinide, 835. --- calcium carbonates from the soda - action of metals on solutions of, 550. manufacture, 12. - --- reaction of, with sodium thio-- carbonate, an alleged reaction for arsenate, 889. preparing, 330. - occurrence of, in volcanic ash from - --- anhydrous, heat of dissolution of, Trans., 73. Cotopaxi, 454. — periodates, Trans., 358. - — decomposition of, by fusion, - phosphates, 214, 215. TRANS., 72. - phosphorised, 1079. - chromiodate, 777. - potassium thiosulphate, TRANS., - copper chromate, basic, 111. 39. diazomethylamidobenzenesulphonate, 666. - pyrophosphate, 215. salts, electromotive dilution constants of, 1072. — dichromate, 110. - cell, 412. - suboxide, 771, 1079; TRANS., 416. - ethylamidoazobenzenesulphonate, 666. - See also Argentous. Skatole-derivatives, 957. glyceroxide, alcoholates of, 426. - heat of solution of, 8. - from strychnine, 682. Skatoxyl, occurrence of, in human sweat, - hydrogen carbonate, detection of thiosulphate in, 79. 1133.formation of, 699. Slag, basic (basic converter or Thomas slag), 216. - hydroxide, new hydrate of, 550. --- as manure, 995. - hyponitrite, reaction of, with — as manure for moorlands, sodium amalgam and water, TRANS., 294. — crystals in, Trans., 601.
— determination of phosphorus reaction of, with ferrous hydroxide and water, Trans., 654. in, 527. - - influence of the ferrous oxide methylamidoazobenzenesulphonate, in, on the growth of plants, 178. 666.

- Sodium, monosulphide, influence of heat on the combination of water with,
- naphthionate, action of benzaldehyde on, 962.
- nitrate in gun cotton, 715.
- reaction of, with ferrous hydroxide and water, TRANS., 655.
- nitrite, reaction of with ferrous hydroxide and water, TRANS., 651.
- periodates, TRANS., 357. phosphate, TRANS., 97.
- dissociation of, 436.
- production of, 107.
- salts, normal, action of aqueous soda on, 440.
- sulphide, conductivity of solutions
- of, 758. - thioarsenate, decomposition of, by silver nitrate, 444, 889.
- thiosulphate, action of potassium permanganate on, 336.
- trichromate, 111. vanadates, 640.
- Soil, arable, determination of ammonia in, 297.
- production of nitrates in, 993. - influence of the physical properties of a, on the amount of free carbonic anhydride present, 521.
- quantity of fertilising matter supplied to, by grazing sheep, 175.
- Soils, absorption by, 76.
- behaviour of urea in, 524. - decomposition of organic matter
- in, 523. distribution of the nitrifying or-
- ganism in, TRANS., 118.
- estimation of absorbed bases in, estimation of ammoniacal nitrogen
- in, 82. - nature of nitrogenous organic
- matter of, 523.
- percentage of nitrogen in, 83. – Tunisian, 860.
- unmanured percentage of nitrates in, 83.
- vegetable, absorption of free nitrogen by, 617.
- direct absorption of atmospheric nitrogen by, 395.
- evolution of ammonia from,
- nitrogen compounds in, 293.
- Soja bean, fat of the, 687. — sugars of the, 686.
- Solanine, amount of, in diseased potatoes, 86).
- Solar radiation and heat, comparative action of, 411.

- Solids, electrical conductivity of, at high pressure, 5.
- Solubility of chlorides, effect of hydrochloric acid on, 445.
- of solid substances, 436.
- of sulphates, effect of sulphuric acid on, 546.
- variation of, with variations in the heat of solution, 548, 632.
- Solution, a particular case of, 547.
- Solutions, aqueous, conditions of equilibrium in, 440.
- ethereal, influence of concentration on the vapour-tension of, 631.
- vapour-tensions of, 207.
- nature of, Trans., 779.
- Sorbus aucuparia, tannic acid in the berries of, 950.
- Sorghum, fermentation of, 519.
- Sparteïne, 162, 1056.
- ethiodide, 163.
- methiodide, 163.
- reaction of, with ethyl iodide, 603.
- Specific gravity of soluble substances, determination of, 9.
- heat, determination of weight from, 419.
- of liquids, 419.
- heats of homologous series of liquid organic compounds, 6.
- inductive power of liquids, 413. - rotation of optically active sub-
- stances in very dilute solution, 755. Spectra, absorption, compounds of rare earths yielding, 890.
- relation between the molecular structure of carbon compounds and their. Part VII, TRANS., 152.
- -variations in the, of didymium salts, 873.
- of didymium and samarium, 1008. of methyl-derivatives of hydroxyanthraquinone, 1.
- phosphorescent, of the earths present in gadolinite and samarskite,
- sharp line, of phosphorescent alumina, yttria and lanthana, 1069. 1070.
- spark, obtained with coils of low tension, 537.
- Spectral lines of solar and terrestrial origin, distinction between, 313.
- Spectroscope, universal, 179.
- Spectroscopy, radiant matter, 1066.
- Spectrum, absorption-, of didymium, variations in, 537.
- analysis, 1066.
- of germanium, 313.
- practical methods of photographing the, 93.

```
Spectrum, production of white light by
                                               Stilbenesulphonic acid, diamido-, 268.
   mixing the colours of the, 1.
                                               Stomach, decomposition of bromides
Sphalerite, action of hydrochloric acid
                                                  and iodides by, 508.
   on, 442
                                                    of the horse, absorption in, 743.
Spheroidal state, 768.
                                               Strawberries, wine and brandy from,
Spinel, fluorescence of, 1005.
     rose, artificial production of, 707.
                                               Stromeyerite from Mexico, 643.
Spodiosite, place of, in the mineral
                                               Strontia, phosphorescence of, 1068.
   system, 346.
                                               Strontium and sodium, double arsenates
Spodumene from North Carolina, 118.
                                                 and phosphates of, 637.
Sponge, sea water, presence of chloro-
phyll in, 613.
                                                   - hydroxide, hydrates of, 765.

    microchemical test for, 301.

Stannic oxide, colour reactions of, 304.
                                                   - oxide, dihydrate of, 108.
  — compounds of, with sulphuric acid and selenic acid, 336.
                                                               - action of carbonic au-
                                                 hydride on, 217.
    - sulphide, detection of, in presence

    hydrated, 217.

  of antimonious sulphide, 183.
                                                  – vanadates, 339.
Starch, action of saliva on, 354.
                                               Strophanthidin, 1116.

    action of sulphuric acid on, 125.

                                               Strophanthin, 970, 1115, 1116.
    - alcoholic fermentation of, 171.
                                                   - reaction of, 1001.
                                               Strophanthus, 970, 1116.

    cellulose, true nature of, 460,

  686.
                                                   - seeds, constituents of, 991.
  - colour reactions of, 534.
- conversion into glucose, by means
                                               Struvite, 709.
                                               Strychnine and brucine, estimation of,
  of hydrochloric acid, 125.
                                                 853.
      determination of moisture in,
                                                 colour tests for, 752.
  1143.

    constitution of, 604.

                                                 - distillation of, with zinc, 282.

    dry distillation of, with lime, 460.

    estimation of, 867, 868.

                                                  - ferrocyanides and ferricyanides, 852.

estimation of, in potatoes, 868.

                                                   - separation of, from fatty matters,
                         in chlorophyll
    - formation
                   of,
                                                 187.
  granules, 1136.
                                                   - skatole from, 682.
    – granules, 355.
                                                   - sulphonic acids of, 853.
                                               Stüvenite, 558.
    - iodide of, 568.

    saccharification of, 354.

                                               Styrolene alcohol, hydrocarbon C<sub>16</sub>H<sub>12</sub>,
    - saccharification of, by nitric acid,
                                                 from, 959.
                                               Styryl-m-pyrazole, 1055.
     soluble, so-called, 173.
                                               Styryl-m-pyrazolone, 1055.
Stassfurt potash liquors, working up of,
                                               Submersion figures, 209.
  1079.
                                               Substitution, an explanation of the laws
                                                 which govern, in benzenoid compounds, Trans., 258, 583.
     salt mines, minerals from, 1085.
Steel, cast, heating and cooling of, 14.
    - determination of phosphorus in,
                                               Succinanil, dibromo-, 934.
  183, 299, 396, 527.
                                               a-Succinylphenylhydrazine, 671.

    effect of manganese, phosphorus,

                                               Sugar, action of nitric acid on, 567.
  silicon and tungsten on the properties

    addition of, to cattle foods, 511.

  of, 639.

    beet-, colour reactions of, 534.

    - estimation of silicon in, 1140.
                                                   - behaviour of, towards acids and
    -fused, heating and cooling of,
                                                 phenol, 534.
                                                   - cane-, action of sunlight on, 93.
   influence of silicon on the properties
                                                       - and starch, comparative sweet-
  of, TRANS., 129.
                                                 ness of, 1026.
  manganese in, 619.
                                                   - — detection of, in wines, 692.
    - rapid estimation of silicon, sulphur

 — juice, analysis of, 751.

    specific rotation of, 756.

  and iron in, 1140.
     residues obtained from, by the

    compounds of, with metallic oxides,

                                                 791.
  action of acids, 894.
Stilbene bromide, p-dinitro-, 151.
                                                   - formation of, in grapes, 517.
  --- diamido-, 268.
                                                 - formed in the inversion of lichens,
                                                 25.
 — reaction of, 53.
— tetrazo-, dyes from, 268.
                                                    from fat, power of the liver to
Stilbenes, substituted, formation of, 151
                                                 form, 67.
```

- Sugar from hesperidin and naringin, 715.
 ——from phlorizin, TRANS., 636.
- —— reaction for, 459.
- grape-, action of dilute acids on,
- in albuminous urine, 1060.
- in the blood, with reference to nutrition, 66.
- invert-, estimation of, 185.
- milk-, alcoholic fermentation of, 1090.
- --- decomposition of, by dilute hydrochloric acid, 26.
- --- products of the fermentation of, with elliptical yeast, 714, 746.
- —— reactions for, 751.
- Sugars, 24.
- action of aromatic diamines on, 475, 930.
- action of phenylhydrazine on, 567.
- classification of, 907.
- ---- estimation of, 867.
- Suint, amines in, 792.
- Sulphaminehemellithylic acid, α and β -, 36.
- Sulphamineterephthalic acid, 728.
- Sulphate, normal, determination of atomic weights by means of, Trans., 676.
- Sulphates and iodates, precipitation of mixtures of, by barium salts, 884.
- ---- conjugated, Proc., 53.
- effect of sulphuric acid on the solubility of, 546.
- volumetric determination of, 181. Sulphazides, 723.
- Sulphethamidobenzoicacid (ortho-), 835. Sulphides, mineral, natural solutions of,
- --- volumetric estimation of, 618.
- Weil's method for the estimation of, 396, 998.
- Sulphimidobenzene, o-, m-, and p-, 834. Sulphimiodonaphthalene, α -, β -, γ -, and δ -, 834.
- Sulphinates, aromatic ethereal, behaviour of, towards hydrogen sulphide, 1048.
- Sulphites, 886.
- —— and nitrites of metals other than potassium, reaction between, TRANS., 659
- detection of, in presence of thiosulphates and sulphates, 749.
- Sulphobenzeneazophenyl- β -naphthylamine, 590.
- Sulphobenzidedisulphonic acid and its derivatives, 263.
- Sulphohemellithylic acid, 36.

- Sulphohydroxystearic acid, 914.
- Sulpholeic acid, 914.
- Sulphonates, aromatic, direct conversion of, into the corresponding amido-compounds, 727.
- Sulphoxylenezo-β-naphtholdisulphonic acid, description and measurement of the spectrum of, Trans., 188.
- Sulphur, action of, on ammonia and metallic bases in presence of water, 327.
- ----- available for sulphuric acid manufacture, assay of iron pyrites for, 180.
- crystallised, new planes in, 343.
 determination of, in albuminoïds,
- 396.

 Eggertz's method of estimation of,
- in iron, 296.

 —— estimation of, in coal and coke, 296.
- estimation of, in coal-gas, 297.
- ---- estimation of, in iron, 1141.
- --- estimation of, in soluble slags, 526.
 - influence of copper on the estimation of, 296.
- rapid estimation of, in iron and steel, 1140.
- Weil's method of determining, 749.
- Sulphuranes, 906. Sulphuric acid, action of, on zinc con-
- taining lead, 1076.

 affinity of certain bivalent
- metals for, 885.

 as an iodine carrier, 573.
- nitrogen compounds in, 998.

 volumetric determination of,
- 181. — anhydride, combination of, with phosphoric and iodic anhydrides, 328.
- and arsenious anhydrides, 212.
- Sulphurous acid, action of nitrous acid

- anhydride, origin of, in the gases of volcanoes, 643.
- preparation of, using a Kipp's apparatus, 769.
- Sumach, determination of tannin in, 624.
- Sun, dissociation of oxygen and hydrogen in the atmosphere of the, 1070.

Sun, presence of carbon and platinum in the, 1065.

- want of proof of the presence of oxygen in the, 1065.

Superphosphates and free phosphoric acid, 995.

Supersaturation \mathbf{of} salt solutions, Trans., 389.

Sweat, human, aromatic products of putrefaction in, 1132.

Svlvestrene, 967.

T.

Talc from South Africa, 561.

— used in papermaking, 452. Tannic acid in mountain ash berries,

Tannin, blue coloration of, with iodine, 173.

determination, 187, 311. - determination of, in sumach, 624.

- liquor, estimation of free acid in, 871, 1144.

 microchemical detection of, 311. - new method for the estimation of,

872. -- oak-, 584.

test for, 406.

Tantalic anhydride, colour reactions of,

Taps, safety, Proc., 108.

Tar oils boiling between 170° and 200°, hydrocarbons from, 35.

Tartar emetic, heat of formation of, solutions, standard, preserv-

ing, 403.

Tartaric acid, Trans., 362.

- rotatory power of substances formed in solutions of, 540.

specific rotation of, 755.

diphenylhydrazide, 138.

Tartrazines, a new series of dyes, 578. Tartronic acid, heat of neutralisation of,

Tea-leaves, composition of, 73.

Teak, certain products from, TRANS., 868.

destructive distillation of, TRANS., 869.

resin, Trans., 868.

Tectone, TRANS., 871.

Tellurides, crystallised, heat of formation of, 1010.

Tellurium, action of, on solutions of silver and copper nitrates, 332.

- dichloride, 1078.

heat relations of the allotropic modifications of, 761.

Tellurium, microchemical test for, 301. silver bismuth from Jalisco,

Mexico, 1084.

tetrachloride, vapour-density of, 770.

valency of, 770.

Temperature, dependence of chemical affinity on, 628.

- influence of, on the rate of action of certain acids on marble, 882.

regulator, 206.

Temperatures, critical, of substances and their thermal expansion as liquids, relations between, 429.

Terebenthene, amido-, 272.

--- nitro-, 272.

- nitro-derivatives of, action of hydrogen on, 675.

 nitrogen-derivatives of, 595. Terephthalic acid, bromo-, 52.

– sulphinide, 728.

Terpene, dextrorotatory, from Russian turpentine, conversion of, 968.

Terpenes, 595.

and their compounds with hydroacids, 965.

- formulæ of, 968.

Terpilenol, 677.

Terpinene, 596, 967.

- nitrıte, 96**7.** Terpineol, 596.

Terpinol, 677.

Terpinolene, 966. Terpol, 677.

Tertiary alcohols, physiological action of, on the animal organism, 857.

Tetanus produced by a new ptomaïne, 284.

Tetrabenzoylisodulcitol, 907.

Tetrabenzovlquinone, 908.

Tetracalcium phosphate, 216, 445.

Tetracetylsativic acid, 799.

Tetrahydrodimethylquinaldine, 381.

Tetrahydro-a ethylquinoline, 279.

Tetrahydrohydroxy-α-phenylquinoline,

Tetrabydrohydroxyquinolinecarboxylic acid, 1119.

Tetrahydrolepidine, 278.

Tetrahydronaphthalene-derivatives, Proc., 93.

Tetrahydronaphthalenedicarboxylic anhydride, Proc., 93.

Tetrahydronaphthalenetetracarboxylic acid, Proc., 93.

Tetrahydronaphthobenzylamine, 719.

Tetrahydro-β-naphthobenzylamine, 840. Tetrahydropapaverine and its derivatives, 163.

Tetrahydropicoline, 277.

Tetrahydropyridylacrylic acid (anhydroecgonine), 742.

Tetrahydroquinolinecarboxylic acid [= 4], 503.

Tetrahydroterephthalic acid, 370.

Tetrahydrothiophencarboxylic acid, 237.

Tetrahydro-α-thiophencarboxylic acid and its salts, 471.

Tetrahydroxyanthraquinones, 56.

Tetrahydroxystearic acid, 799.

Tetrahydroxyvaleric acid, 230.

Tetraisobutylmethylenediamine, 1027. Tetramethdiamidoditolylnitrophenyl-

methane, 837.

Tetramethoxydiamidodiphenyl, 364.

Tetramethylammonium enneaiodide and heptiodide, 910.

Tetramethylanthracene, 1102.

Tetramethyldiamidobenzophenone, 674. Tetramethyldiamidodichloronitrotriphenylmethane, 837.

Tetramethyldiamidodiphenylethane,

Tetramethyldiamidodiphenylthiënylmethane, 481.

Tetramethyldiamidothiobenzophenone and its derivatives, 816.

Tetramethyldiamidotoluene, 938.

Tetramethyldimethylene disulphone, 463.

Tetramethyldiquinoline and its derivatives, 1120.

Tetramethylene aldehyde, Trans., 238.

derivatives, Trans., 228.

Tetramethylenecarboxylic acid, TRANS., 8.

Tetramethylenedicarboxylic acid [1, 1], and its salts, TRANS., 4.

—— —— [1, 2], TRANS., 22. —— anhydride, TRANS., 25.

Tetramethylenetetracarboxylic acid, [1, 1, 2, 2], TRANS., 17, 21.

Tetramethylpyrazine, 465.

Tetraphenylazine, TRANS., 101.

Tetraphenyleneazine, Trans., 101. Tetraphenylglycosine, Trans., 553.

Tetraphenyigiycosine, 1 RANS., 303. Tetrapropylmethylenediamine, 1027.

Tetrethyldiresorcinol, 661.

Tetrethylmethylenediamine, 1027. Thalleroquinine reaction, 311.

Thallin, 871.

Thallium cobalt nitrite, 13.

---- in platinum, 702.

Thebaine, 280.

Theïne, action of, on voluntary muscle, 985.

---- estimation, 1002.

Thermal properties of a mixture of ethyl alcohol and ethyl oxide, TRANS., 755.

Thermochemical data, determination of the constitution of carbon compounds from, 421, 423. Thermochemical law respecting nonreversible electrolytic actions, 1072.

Thermochemistry of bibasic phosphates and their congeners, 202.

—— of phosphates, 94.

of reactions between magnesium salts and ammonia, 96.

Thermodynamic equivalents or constants, 99.

Thermodynamics and chemistry, 431.

Thermo-elements, electromotive force of some, 414.

Thermo-regulator, 698.

Thiammeline, 650. Thiënethylamine, 718.

Thiënyl bisulphide, 805.

— mercaptan-derivatives, 805.

Thiënylacetic acid, 238. Thiënylglycollic acid, 238.

Thio-salts, inorganic, reduction of,

Thioanisidine, 823.

Thioanisylthiocarbamide, 823.

Thioanisylthiocarbimide, 823.

Thiocarbamic chloride, 1025.

Thiocarbamide, action of cyanides on, Trans., 380.

— action of excess of bromine on, TRANS., 378.

 action of silicon tetrabromide on, Trans., 202.

—— dihaloid derivatives of, Trans., 378.

---- trichloromethylsulphinate, TRANS., 667.

Thiocarbamides, action of bibasic acids on, 489.

Thiocarb-o-amidophenol, 477.

Thiocarbimides, aromatic, additive products of, 581.

— molecular refractive energies of, 754.

Thiocarbonyl chloride, action of chlorine on, Trans., 272.

TRANS., 273.

Thiocyanates, effects of, on vegetation and fermentation, 519.

— molecular refractive energies of, 754.

organic, action of chlorine on, Trans., 268.

Thiocyanic acid, action of acids on, 1025.

and its compounds with ethers and alcohols, 789.

estimation of, 1144.

Thiodiglycol chloride, 228.

Thiodiglycol compounds, 228. Thiodimethylaniline, 723. Thiodiphenylamine, synthesis of, 245. Thioformaldehyde, derivatives of, 27. Thiolutidine, 920. Thiometaformaldehyde, 27. Thiomethyluracil, 128. Thiomethyluracilacetic acid, 128. Thiomolybdates, reduction of, 111. Thiophen, bye-products of the manufacture of, 805. -green and its derivatives, 481. --- -group, 921. - in aniline, 471. - series, synthetical investigations in, a-a-Thiophendicarboxylic acid, 237. Thiophendicarboxylic acid, 921. a-Thiophenic acid, 362. reduction of, 471. - relation of, to the normal thiophencurboxylic acids, 129. B-Thiophenic acid, derivatives of, 237. Thiophthalic anhydride, 951. Thiosulphate, errors connected with the estimation of iodine with, 688. - reactions, 689. Thiosulphates, decomposition of by acids, 883. - double, Trans., 38. - new reaction for, 297. Thiosulphonates, aromatic, containing bivalent alkyl radicles, and the products of their reduction with hydrogen sulphide, 953, 954. Thiosulphuric acid, detection of, in a mixture of alkaline salts, 297. Thio-p-toluidine and its derivatives, Thio-p-tolylthiocarbamide, 473. 1: 2-Thioxen, 1101. Thioxen (meta-) and its derivatives, 921. Thomas-slag. See Basic-slag. Thomsonite, lamellar, 350. Thorium chloride, vapour-density of, equivalent and atomic weight of, 704. phosphorescence of, 1068. — silicates, 1016. - sodium phosphates, 1017. Thulium and erbium, phosphorescence of, 1068. Thymol, chloro- and bromo-, cymene from, 37. - oxidation of, 241. Thymoguinol, β -bromo-, 720. — α-chloro-β-bromo-, 720. - oxidation of, 1035. Thymoguinols, a-chloro-, 720. Thymoquinone-oxime, 41.

Thymoguinones, a- and β -chloro-, 720.

Thymoquinones, isomeric chloro- and bromo-, 720. Thymyl ethyl carbonate, 38. Tiglic acid, and its derivatives, 29. Tin and platinum metals crystalline alloys of, 779. - estimation of, in alloys, 304. - See also Stannic. Titanic acid, estimation of, 1064. anhydride, colour reactions of, 304. - oxide, action of carbon tetrachloride on, 329. - hydrated, 337. Titanium, 14. – bisulphide, 15. – carbide in pig-iron, 703. — di-, tri-, and tetra-chlorides, 338. – monosulphide, 15. --- physical constants of, 778. – sesquisulphide, 15. – tetrachloride, 337. Tolane, p-dinitro-, 152. Toludiquinoyltetroxime and its anhydride, 809. Toluene, action of heat on the vapour of, 572. - action of methylene chloride on, in presence of aluminium chloride, 1102.and ethylene, action of heat on the mixed vapours of, 572. — chlorination of, 362. — o-chloro-, 362. ---- o-cyano-, 1035. - a- and β-dichloro-, 363. ---- fluoro-, 1**3**0. —— nitrochloro-, 363. — nitro-β-dichloro-, 363. – tetrasulphide, 923. Tolueneazimidotoluene, 731. Toluene-o-azodiethylaniline, p-acetamido-, 41. Toluene-o-azodimethylaniline, p-acetamido-, 41. - p-amido-, 41. Toluene-p-azodimethylaniline, o-acetamido-, 41. - o-amıdo-, 41. Tolueneazodimethylaniline, p-azophenol, - p-azo- β -naphthol, 41. Tolueneazo-a naphthol, ortho- and para-, and their derivatives, 55. Tolueneazo-β-naphthol, ortho- and para-, and their derivatives, 55. Tolueneazoresorcinol (para-), 664. Toluene-p-diazoconine, 137. Toluene, p-, m-, and o-diazopiperidide and their nitro-derivatives, 137. Toluenedisulphonic acids, 264. - the six isomeric, 492.

Toluenes, chloronitro-, 1034.

Toluenesulphonic acids (metaand para-), and their derivatives, 263. Toluic acid, bromonitro-, 37. Toluic acid (meta-), 724. Toluic acid (ortho-) and its derivatives, 945.- bromo-, 240. --- acids, bromo-, 668. Toluidine, chloro-, and its derivatives, Toluidine (para-), citric acid derivatives of, 40. - (ortho- and para-) compounds of, with cupric chloride, 472. - (para-), hydrate, 134. Toluidines, chloro-, 1034. - (ortho- and para-), separation of, 576. Toluidinesulphonic acids, separation of, Toluidodibromopropionitrile, a-orthoand **a**∙para-, 143. Toluidopropionic acid (ortho-), 260. Tolunaphthazines, isomeric, constitution of, 591. Tolunitrile, bromo-o-, 668. a-Toluphosphinic acid and its derivatives, 825. Toluquinol and its chloro- and bromoderivatives, 1036. Toluquinone and its chloro- and bromoderivatives, 1036. Toluylene-blue, 139. Toluylenediamine, o-aceto-m-, 41. (ortho-), action of Toluylenediamine ethyl acetoacetate on, 247. Toluylenediamine (meta-para-), action of monatomic aldehydes of the fatty series on, 816. Toluylene-dithiourethane (meta-), 367. Toluylene-red, 139. Toluylene-thiocarbamide (ortho- and meta-), 367. Tolylacetic acid (para-), 949. Tolylbenzene, a bromo-, TRANS., 87. derivatives of, Trans., 87. - α- and β-dibromo-, Trans., 89. Tolylbenzoic acid, β-dibromo-, TRANS., Tolylcarbamide, di-o-chloro-m-, 810. Tolyldichlorobenzoic acid, 832. Tolyldiphenylpyrroline, 736. Tolylethylamide (para-), 358. Tolylglycine, nitro-, salts of, 383. Tolylglyoxylic acid (para-), 826, 948, Tolylhydrazineacetone (para-), 956.

Tolylhydrazinepyruvic acid (ortho- and

Tolylhydroxyacetic acid (para-), 949.

Tolyl-β-naphthylamine (para-), 592.

Tolylmethamide (para-), 358.

para-), 956, 957.

Tolylnitrotoluenesulphazide, nitro-, 723. Tolylphthalamic acid (ortho-) and its methyl-derivatives, 586. Tolylphthalimide (ortho-), 586. Tolyl-β-propionic acid (para-), 827. Tolylpyrrolinedibenzoic acid Tolylthiënyl ketone (ortho-), 238. Tolylthiocarbamide, di-o-chloro-m-, 810. Tolylthiocarbimide oxide (para-), 581. Tolyltoluenesulphazide (ortho-), 723. Topaz from the Thomas range, Utah, 453. Torpedo, chemical studies on, 1128. Torpedo-mucin, 1128. Tortoise, urine of the, 170. Tourmaline, black, from North Carolina, 118. Trachyte-dolerites of the Vogelsberg, 904. Trachytic rocks from the island of San Pietro, 904. Trialkylpyridines, symmetrical, oxidation of, 378 Trianisylarsine, 367. Triauramine, 112. Triazobenzenesulphonic acid (para-) and its derivatives, 817. Triazonaphthalenesulphonic acid and its derivatīves, 818. Tribenzoylisodulcitol, 907. Tribenzylbenzoxyammonium iodide, 246.Tribenzylhomo-o-phthalimide, 1112. Tribrassidin, 233. Trichloromethylsulphonylthiocarbamide, Trans., 669. Tricresylcyanurate, o-, p-, and m-, 1033. Tridymite, artificial production of, 559. Trierucin, 1030. Triethyl carbinol, 353. - chloraurophosphite, 227. cyanuride, 1024. formate, 911. Triethylbenzylphosphonium salts, action of heat on, 1106. Triethylhomo-o-phthalimide, 1111. Triethylmethylammonium pent- and hept-iodides, 910. Trieugenyl cyanurate, 1033. Trihydraurylamine, 112. Trihydroxymethylanthraquinone Drosera Whittakeri, Trans., 373. Trihydroxypyridine [2:4:6] and its derivatives, 155. anhydride of, 156. Trihydroxyxanthogallol, 925. Triisobutylamine platinochloride, 461. Trimesic acid, synthesis of ethereal salts of, 492. Trimethyl chloraurophosphite, 227. Trimethyl-α-amidobutyrobetaine and its

derivatives, 792.

1252Trimethylamine, source of, in ergot of rye, 394. Trimethylanthracene, 941. Trimethylanthragallol, 593. 2, 4, 5 Trimethylbenzoyl-β-propionic acid, 827. Trimethylbismuthine, 802. Trimethyldipiperidyl, 162. Trimethylene bromide, action of, on the sodium compounds of ethylic acetoacetate, benzoylacetate, p-nitrobenzoylacetate, and acetonedicarboxylate, 32, TRANS., 702.
— iodide, TRANS., 12. Trimethylenedicarbanilic chloride and anilide, 578. Trimethylenedicarboxylic acid, Trans., Trimethylenediphenyldiamine, action of carbonyl chloride on, 577. - and its derivative, 577. Trimethylenediphenylcarbamide, 577. Trimethylene-a-tetramethylenedipyrroline, 273. Trimethylenetricarboxylic acid, constitution of, 468. Trimethylethylammonium enneaiodide, 910. Trimethylethylene, action of nitric peroxide on, Proc., 109. Trimethylhomophthalimide and its derivatives, 726. Trimethylindole [1':2':3'], 149. Trimethylnaphthalene, 841. Trimethylphenylpyrazoline, 933. Trimethylpropylammonium hydroxide and iodide, 461. Trimethylpyrroline, 275. Trimethyltbiophen, 921. Trimethyltricoumaric acid, 830. Trimethyltricoumarin, 830. Trinaphthyl cyanurates, α - and β -, 1034. Tri-p-nitrophenyl cyanurate, 1033. Triphenetylarsine, 367. Triphenylammeline, a third, 662. Triphenylbismuthine, 368. - dibromide, 368. - dichloride, 368. Triphenylcarbinoldicarboxylic acid, 267. a-Triphenylguanidine, a physical peculiarity of, 366. Triphenylmelamine, 663. formula of, 650. Triphenylmethane-derivatives, 836. description and measurement of the spectrum of, TRANS., 162. m-nitro-, 44.

Triphenylmethanecarboxylic acid, 267.

ethyl sodomalonate, TRANS., 224.

B-Triphenylpropionic acid, 671.

Triphenylmethyl bromide, action of, on

- and its salts, Trans., 226.

Triphenylpyridine, 599. Triphenylpyrroline [1:2:5], 736. Triphenylthiammeline, 662. Trithiovaleraldehyde, 462. Trithymyl cyanurate, 1034. Tri-p-xylylmethane, 942. Trona, 1021. - artificial production of, 771. Tropæolin O, description and measurement of the spectrum of, TRANS, OOO, description and measurement of the spectrum of, Trans., 184. Tropine, constitution of, 740. Trypsin, digestion of fibrin by, 1130. - in urine, **69.** Tungsten, 14. atomic weight of, 111. Tungstic acid, separation of phosphoric acid from, 866. Turkey-red oil, 914. Turnbull's and Prussian blues, composition of, TRANS., 644. Turquoise from New Mexico, 116. from the Kirghise Steppes, 1021. Tuscany, minerals from, 19. Tyrosine, relation of, to hippuric acid, 1133. υ. Ultramarine, action of carbonic anhydride on, 774. formation of, in the wet way, 110. Uracil, nitro-, 128. metallic derivatives of, 920. Uracilcarbamide, nitro-, 920. Uracilcarboxylic acid, nitro- and amido-, 128.acids, amido- and bromo-, 920.

Urao, artificial production of, 771.

the human system, 856. behaviour of, in soils, 524.

- estimation, 1001.

90.

Ureometer, 310.

sodium hypobromite, 90.

Uric acid, estimation of, 621.

animal organism, 388.

pounds of, 919.

See also Carbamide.

— solubility of, 919.

Urea and uric acid, excretion of, from

behaviour of quinol with, 514.

- estimation of, in human urine with

Hufner's method of estimating,

--- place of origin of, in the

series, synthesis of com-

volumetric estimation of, 1145.

Uric acid, synthesis and constitution of, 918.

Urinary pigments, 1133.

Urine, behaviour of, with quinol, 514.

---- creatinine in, 513.

detection of albumin in, 1003, 1150.

determination of hippuric acid in, 535, 1001.

— diabetic, active β-hydroxybutyric acid in, 290.

hydroxybutyric acid in, 464, 857.

--- reducing substance in, 513. --- estimation of nitrogen in, 863.

human, estimation of urea in, with sodium hypobromite, 90.

- mucin in, 390.

- normal, albumin in, 390.

- of the tortoise, 170.

— pathological, occurrence of reduction products of hæmatin in, 1127.

— peptones in, 188.

quantitative estimation of oxalic acid in, 401.

reactions for distinguishing between chrysophanic acid and santonin colouring matters in, 406.

- separation of globulin from albumin in, 406.

— sugar in, 1060.

---- trypsin in, 69.

xanthine derivatives in, 739.

Urns, ancient, analyses of, 218.

Urobilinoïdin, 1127.

Utah, rare copper minerals from, 19. Uvinone, 658.

٧.

Valeric acid, γ-amido-, 463.

--- preparation of, 1028.

Valerolactone, action of phenylhydrazine on, 490.

Vanadates, 1018.

---- alkaline, 639, 705.

--- ammoniacal, 899.

arsenates and phosphates, analogous, Trans., 94.

—— metallic, 898.

--- of the alkaline earths, 339.

—— organic, Trans., 751.

Vanadic acid, estimation of, 691.

--- reactions of, 896.

— anhydride, colour reactions of, 305. Vanadinite, crystallised, from Arizona and New Mexico, 347.

Vanadium, detection and estimation of, in minerals, 690.

Vanadium, extraction of, from iron ores, 449

Vanillin, preparation of, from m-chlorop-nitrobenzaldehyde, 483.

Vanillinoxyacetic acids, 259.

Vapour-densities, apparatus for determining, 431, 632, 882.

— determination of, 695.

- of phosphorus, arsenic, and antimony at a white heat, 888.

— density, determination of the, of high boiling substances under reduced pressure, 882.

for, 695, 765.

— of zinc, 218.

Vapour-pressure, influence of change of condition from the liquid to the solid state on, 430.

Vapour-tension, measure of the chemical attraction of water of crystallisation derived from, 436.

fluence of concentration on, 631.

of sodium acetate solutions,

322.

- of water from salt solutions, 321.

Vapour-tensions, apparatus for measuring, 207.

— of ethereal solutions, 207.

— — of saturated solutions of salts; relations to efflorescence and deliquescence, 208.

Vapours, electrical conductivity of, 4.

Vaselin, 456.

Vegetable tissue, presence of albumin in, 407.

Vegetation, effects of thiocyanates on, 519.

Velocity of chemical reactions, 697.

Vesuvius, minerals from, 17.

Victoria yellow, colour reactions of, 624. Villarsite from Traverselle, 351.

Vincetoxicum officinale, active principles of, 377.

Vine leaves, physiological rôle of, 685. Vinyl chloride, action of ammonia on, 793.

---- oxide, 1089.

---- sulphide, 1089.

Vinylbenzoic acids, o-trichloro- and o-dichloro-, 955.

Vinylphenol dibromide, bromo-p-, 1110. α-Vinylpyridine, 737.

Violan from Piemont, 784.

Virus, zymotic, and fermentation, 292.

Vitellin, products of digestion of, 286.

Vitelloses, 286.

Volatilisation of dissolved substances during the evaporation of the solvent, 211.

Volcanic ash from Cotopaxi, occurrence of silver in, 454.

- fragments from the Lake of Bracciano, 21.

Volcanoes, origin of hydrogen chloride, sulphurous anhydride, and iodine in the gases of, 643.

Voltaic action, theory of, 417.

- combinations, new class of, in which oxidisable metals are replaced by alterable solutions, Trans., 672.

Volume, change in, during the formation of metallic oxides, 1073.

- changes in, accompanying solution,

Volumes, law of, in chemistry, 99.

- molecular, influence of double and ring linking on, 545.

W.

Water analysis, 1141.

- bacteriological examination of, 619.
- changes induced in, by the development of bacteria, 615.
- colorimetric determination of nitrites in, 533.
- determination of sulphuric acid in,
- estimation of carbon in the organic
- constituents of, 184. - estimation of formic acid and
- organic matter in, 1000. estimation of nitrates in, by means
- of aluminium, 184. expansion and compressibility of, 695.
- from an artesian well in the Tunisian Chotts, 455.
- from Flitwick, 1087.
- -from the hot springs of Wiesbaden, 352.
- from the spring at Oued Ref, 455. - from the wells of Zemzem, 455.
- liquid, influence of, in promoting the interaction of hydrogen chloride and iodide on exposure to light, TRANS.,
- mineral, from Woodhall Spa, occurrence of free iodine in, 221.
- of Schutzenhof-Quelle, Wiesbaden, 647.
- natural, determination of organic matter in, 533.
- of a saline lake near the Stolüpin mineral springs, 648.
- of crystallisation, amount of, in certain salts, 766.
- measure of the chemical at-

- traction of, derived from the vapourtension, 436.
- Water, rain-, at Circnester, amount of chlorine in, TRANS., 92.
- at Rothamsted, chlorine, sulphuric anhydride and ammonia in, TRANS., 501.
- Water-gas, composition of, 1078.
- Waters, drainage-, composition Trans., 506.
- estimation of organic carbon and nitrogen in, 619.
- mineral, from Java, 224.
- from Servia, 648.
- river-, of La Plata, 786.
- sulphuretted, of Olette (Pyrénées Orientales), 710.
- well-, determination of nitrates in, 691.
- of Harpenden, study of, TRANS., 500.
- Waxes, sp. gr. and other characters of,
- Weight of drops and their relation to the constants of capillarity and the capillary meniscus angle, 210.
- Well-waters. See Waters. Wheat, loss occasioned by improper
- methods of pickling, 293. Willemite, artificial production of, 345.
- Wine, detection of aniline colours in, 1147.
- detection of cane-sugar, glucose, and dextrin in, 692.
- estimation and detection of aluminium in, 690.
- estimation of glycerol in, 86, 184, 306.
- from raspberries and strawberries, 292.
- red, detection \mathbf{of} artifically coloured, 91, 187.
- Wines, estimation of glycerol in, 184.
- estimation of solid matter in, 87. Wollastonite from Sardinia, 709.
- Wood in paper, estimation of, 620.

X.

Xanthine-derivatives in urine, 739. Xanthocreatinine, formation of, in the organism, 613.

Xantho-rhodium bromide, 115.

- chloride, 115.
- dithionate, 115. hydroxide, 115.
- ---- nitrate, 114. — oxalate, 115.
- ---- platinochloride, 115.
- silicofluoride, 115.
- ---- sulphates, 115.

Xenotime from North Carolina, 118. Xenylenedihydropyrazine, 493. Xeronic acid, synthesis of, from α-dibromo-normalbutyric acid, 917. Xylene, diamido-, 668. meta-, action of methylene chloride on, in presence of aluminium chloride, - ortho-, oxidation of, 240. \mathbf{X} yleneazoresorcinol, 820. Xylenol, p-amido-, 668.ethers, heat equivalent of, 428. Xylidinesulphonic acid (meta-), constitution of, 382. Xylorcinol (meta-), 39. Xylorcinolcarboxylic acid (meta-), 39. Xyloquinol (para-), oxidation of, 1035. Xyloquinonedioxime (para-), 668. Xyloquinoneoxime (para-), 667. ${f Xyloyldiphenylamide}, 935, 936.$ Xylyl ethyl ketone, para-, 253.

—— phenyl curbinol, o-, m-, and p-, 941. - phenyl ketone, o-, m-, and p-, 941. phosphorous compounds, 824. Xylylamines from xylenols, primary and secondary, 664. Xylyl-p-cymylphenylmethane (para-), Xylylene oxide, tetrachloro-, 832. Xylylglyoxylic acid (ortho-), 826. Xylyl-β-ketonic acid (para-), 253. Xylyl-γ-ketonic acid (para-), 827. Xylylphosphinic acids, α -m- and β -m-, Xylylphosphochloride [1.3.4], 824.

Y.

Z.

Zinc-blende, black, of Freiberg, 451. bloom, and fibrous, from Carinthia, chlorides, ammonio-, 551. containing lead, action of acids on, - corrosion of, by ammonium chloride and potassium nitrate, 889. — determination of, 689. --- -dust, valuation of, 301. — effect of, redistillation on, 446. – -eisen, 550. --- electrolytic estimation of, 1000. - equivalent of, comparison of, with that of hydrogen, Trans., 854. estimation of, as pyrophosphate, 398. – ferrite, 557. – manganese ammonium sulphate, Proc., 53. microchemical test for, 300. - nitrate, basic, 1080. - powder, titration of, 865, 1000. - valuation of, 80. - residues obtained from, by the action of acids, 894. - separation of, from iron, cobalt, and nickel, 182. - sulphate, TRANS., 681. – sulphide, phosphorescence οf. 1068. titration of, with iodine, 301. vapour, density of, 218. Zincite, artificial production of, 345. -crystallised, from Stirling Hill, New Jersey, 343. Zinkenite from Arkansas, 782. Zirconium, 896. crystallised compounds of, 778. - sodium phosphates, 1017. Zirconyl compounds, 778. Zymogluconic acid, 468.